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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Observations on Crushing Stone in the Bladder.* By GEORGE H. PORTER, M.D., T.C.D.; F.R.C.S.I.; Senior Surgeon to the Meath Hospital and County of Dublin Infirmary; Surgeon to Simpson's Hospital; Examiner in Surgery Royal College of Surgeons, Ireland; Consulting Surgeon to the Coombe Lying-in Hospital; Member of Council of the Surgical Society of Ireland; Member of the Pathological Society of Dublin; Lecturer on Clinical Surgery.

CASE I.—PATIENT AGED SIXTY-EIGHT YEARS; LITHATE CALCULUS, OF MEDIUM SIZE; LITHOTRITY; RECOVERY.

CASE II.—PATIENT AGED THIRTY-SIX YEARS; OXALATE OF LIME CALCULUS, OF SMALL SIZE; LITHOTRITY; RECOVERY.

CASE III.—PATIENT AGED SEVENTY-FOUR YEARS; LITHATE CALCULUS, OF SMALL SIZE; LITHOTRITY; RECOVERY.

TWENTY years ago the late Sir Philip Crampton delivered an able lecture, in the theatre of the Meath Hospital, on lithotrity, which he published, with accounts of twenty of his own cases, in the February number of this Journal for 1846. Since that period I can find but few records of the operation by surgeons in this country, so that we are indebted chiefly to our English and continental brethren for information concerning this operative procedure, and

the after-management of the patient.[a] This consideration in some measure induces me to note and remark on the following cases which came under my own care during the last year, and which proceeded to a successful termination. A certain amount of interest, it may be presumed, attaches to the subject, inasmuch as eminent medical men of the present day are differing widely in opinion as to whether lithotrity has any advantage or superiority over the operation of cutting for the stone.

They hold, also, very opposite views respecting the proper mode of performing the crushing operation in its various stages. And yet, perhaps, this should not be wondered at when we bear in mind that lithotrity may be said to have been in its infancy not many years ago. But no operative procedure has been more improved upon of late, owing to the ingenuity of mechanical contrivances, and the practical hints of scientific surgeons. The clumsy appliances of forty years ago are now only shown in order to contrast them with the superior instruments of the present day; and it is satisfactory to know that some of the apparatus of the greatest utility to both patient and surgeon have been devised in this country. The name of Mr. L'Estrange at once occurs to me in this connexion, as one to whom the surgical profession will acknowledge they are deeply indebted for many valuable instrumental improvements. Mr. Oldham, formerly of the Bank of Ireland, has also in this way rendered important services. The aged sufferer can now have a stone in his bladder shattered by lighter and more manageable instruments, and is saved the danger of the formidable operation of lithotomy. In theory, nothing can be easier than breaking a calculus in the bladder, but the operating surgeon does not usually find it to be so when he comes to deal with such a case. Every minute detail, from the moment he measures the size of the stone, and endeavours to ascertain its composition, requires the utmost watchfulness, steadiness, and dexterity.

Case I.—*Patient aged Sixty-eight Years; Lithate Calculus, of Medium Size; Lithotrity; Recovery.*—A gentleman, aged sixty-eight years, labouring under symptoms of stone in the bladder, and which had annoyed him more or less for two years previously, consulted me in April, 1864. He was in good health otherwise, and had been of active habits, fond of shooting and coursing.

[a] Since writing the above I have perused a practical paper on Lithotrity, by my friend, Dr. Wilmot, in the November number of this Journal, 1852.

At times he suffered a little from piles, and at first attributed his uneasiness to them. About twelve months before he came under my notice, he felt that driving gave him pain in the glans penis, and that he was also unable to walk as well as usual in consequence of irritability of the bladder. He had never passed any bloody urine, nor had he felt excruciating pain when his bladder was emptied. He was seen by Mr. Adams, in consultation with me, and when we sounded him we quickly ascertained the presence of a stone. His prostate was not enlarged; and although I did not measure the calculus, the passage of the sound over the foreign body gave the sensation as if it were not large. His urethra was full-sized and healthy, and his urine was highly acid. Deeming the case favourable for breaking the stone, I advised the operation. Having business of importance, however, to transact in the country, all treatment was postponed until the end of the following month, when he placed himself under my care. On the 3rd of June, assisted by my friend Mr. Wharton, I proceeded to perform lithotrity in the following manner:—I laid him on a sofa, with a thick pillow under his buttocks, which I thus raised about two inches above the level of his shoulders, his head meanwhile being supported by another pillow. I then injected about six ounces of tepid water into the bladder. Having then warmed (by dipping it suddenly into a vessel of hot water) the powerful fenestrated lithotrite of Weiss, improved by Mr. Henry Thompson, I oiled it well, and slowly introduced it. As the instrument passed across the bladder, I distinctly felt it strike against the stone which lay to my left as I stood between his legs. Cautiously turning the beak of the lithotrite a little to the opposite side, I pushed it towards the posterior part of the viscus, in order to prevent the male blade, whilst opening, from displacing the calculus. Having then gently opened the blades, I turned them down on the stone, and fortunately seized it. The scale on the instrument indicated its size, which was three-quarters of an inch in diameter. I then steadily screwed home the male blade, when the stone was heard to give way with an audible crack. Opening the jaws a second time, and turning them, thus separated, to the left, I caught a fragment, and shattered it in the same manner. A third piece was seized similarly, and similarly crushed. Three minutes and a-half having elapsed during the operation, I withdrew the lithotrite, and had the patient gently lifted into bed, and placed a quarter grain morphine suppository in his rectum. Throughout the entire procedure he did not complain,

and described the sensation of the instrument moving in his bladder as causing more uneasiness than actual pain. I desired him to retain his urine as long as possible; and when obliged to void it, to do so whilst lying on his back. I requested him also to drink freely of barley-water, and to have some beef-tea two hours after the operation. I saw him three hours after, and found him easy. He had passed water slightly tinged with blood, and containing two little clots about the size of small peas. Four or five minute fragments had come away also, not larger than a pin's head, but showing the composition of the stone (lithate). They were caught in a little net of fine muslin, which I had placed over a small urinal, in order to collect detritus when he made water. I visited him again at 9 o'clock, p.m., the day of the operation, and he was suffering from retention of urine, arising evidently from the swelling of the neck of the bladder in consequence of the irritation of the lithotrite. I drew off, on this occasion, a large quantity of urine, which was merely coloured with blood, and thus gave him great relief. I introduced, as before, a morphine suppository.

June the 4th.—I saw him at 8 o'clock, a.m. He had passed a comfortable night, slept well, and emptied his bladder twice, but each time with some little delay and difficulty. No fragments passed. I kept him in bed this day, and ordered him to continue the beef-tea, and have one glass of sherry, as he was not feverish nor in pain.

June the 5th.—Three fragments of considerable size came away during acts of micturition. One of them was arrested at the orifice of the urethra for an instant or two, but passed out at last with the current of water.

June 12th.—A second sitting. This day I used the flat-bladed lithotrite, recommended by Thompson, to act on the fragments, and operated as he lay across the bed, with a bolster placed under his nates. I caught four pieces of the stone and broke them up, and then withdrew the instrument, which brought out in the female blade a good deal of pulverized calculus. He passed water before I left him; it was not bloody, but contained two or three minute clots, and a good deal of fine detritus was washed out with it. It would be tedious to record the further progress of this case from day to day. It will be sufficient to add that he suffered little or no pain throughout the entire treatment; and after having submitted to eight sittings, was perfectly freed from the complaint. An interval of nine days elapsed between the first and second sittings, and even longer periods intervened between the other operations,

as he frequently requested me to allow him to postpone them. He left town in the middle of September, about a fortnight after I had prononnced that his bladder was free from detritus, and all symptoms of irritation had subsided. I have lately heard from this gentleman, and he informs me that he is in the best of health, and able to resume his amusement of coursing, &c.

Case II.—*Patient aged Thirty-six Years; Oxalate of Lime Calculus, of Small Size; Lithotrity; Recovery.*—Mr. A., an engineer, aged thirty-six years, consulted me on the 9th of August, 1865, suffering from symptoms of stone which had existed five months. He had taken a great deal of medicine to relieve what he was informed was an irritable bladder, but without relief. He was disturbed frequently at night to pass water, and latterly, after any exertion, the urine had a smoky appearance. He was excessively nervous, and refused at first to allow me to use a sound; but two or three days subsequently permitted me to do so. I introduced Henry Thompson's sound, a most useful instrument, I may remark, and one by which the surgeon can either draw off urine or inject the bladder without withdrawing it. For a moment I failed to detect any calculus; but, having allowed some of the water to escape through the sound, I struck a stone, which gave me the sensation as if it were very small. Having informed him of its presence, I desired him to return to his lodgings, to go to bed for two or three hours, and to take a draught containing two grains of quinine with fifteen drops of laudanum. I passed a No. 12 metallic bougie every third day for a fortnight, and by this means lowered the sensibility of the urethra.

August 26th.—I introduced the flat-bladed lithotrite for the purpose of measuring the stone, and of breaking it in case it was small. After about a minute I seized the calculus; the index on the handle of the instrument showed that it was not quite a quarter of an inch in the diameter in which I held it. I screwed home the male blade, and crushed the stone. I attempted to grasp a second piece, but failed. I then withdrew the lithotrite, in the female blade of which some detritus remained, and found it was oxalate of lime. The patient did not pass water for three-quarters of an hour afterwards; it was then bloody, and contained some little sharp fragments, weighing together four grains. The case progressed most favourably from day to day. Detritus was passed for five days in very small quantities, and then all symptoms of the

complaint disappeared. He remained in town until October, when I carefully sounded him, but could not discover the least trace of stone remaining. The lithotrite was used to sound him, but he never required a second operation, and has remained in excellent health ever since.

Case III.—*Patient aged Seventy-four Years; Lithate Calculus, of Small Size; Lithotrity; Recovery.*—John M., a farmer, aged seventy-four years, was sent to me by my friend, Dr. M'Evoy, of Balbriggan, and admitted into the Meath Hospital, October 22nd, 1865. He felt irritation in the bladder two years previously, shortly after recovering from an attack of rheumatic fever. He suffered from pain in the glans penis after passing water; and for the six months prior to admission his urine was always more or less tinged with blood, particularly after walking or driving. He was also greatly annoyed by tenesmus and diarrhea, his bowels being moved as often as five times in the twenty-four hours. He applied to Dr. M'Evoy, who at once suspected from the symptoms that he had a stone in his bladder. I sounded him, and struck the calculus.

October 23rd.—His urethra being large, I measured the stone with a flat-bladed lithotrite; the diameter in which I caught it was $\frac{9}{16}$ths of an inch. His prostate was enlarged, which rendered the introduction of the instrument somewhat tedious. He was unable, it may be added, to retain his urine for more than one hour at a time, but there was no evidence of kidney disease.

October 27th.—He was brought into the operating theatre of the hospital, and as the size of the stone did not require a very powerful lithotrite, I crushed it twice with the flat-bladed instrument, before many of my professional brethren, who favoured me with their presence, and a large class of students. The patient, shortly after the lithotrite was withdrawn, made water, which was bloody, and contained a few small fragments of the stone (lithate). I placed a morphine suppository in his rectum, and had him carried to his bed, which had been previously well warmed.

October 29th.—Some large pieces of detritus came away.

On November 1st the second sitting took place, three fragments were broken, and a considerable quantity of pulverized calculus was brought away in the female blade of the lithotrite.

November the 4th was the day for the third sitting. The time occupied on this occasion was only two minutes, as the patient became weak and oppressed in his breathing; only one fragment

was caught and crushed. The patient got some warm brandy and water. There was no blood in the urine, which he discharged almost immediately after the removal of the lithotrite.

November the 7th.—His left testicle became very much swollen and dreadfully painful, but the symptoms of vesical irritation had almost completely subsided. Four leeches were applied to his scrotum, succeeded by a linseed-meal poultice.

November 9th.—The swelled testicle was not relieved. Several fragments had passed along with the urine between this date and the last sitting.

November 11th.—He was attacked with bronchitis, and his testicle was much worse—evidently advancing to suppuration. All operative measures, with respect to the calculus, were now suspended, and the treatment was altogether directed towards the chest affection and the testis.

November the 26th.—I opened an abscess in his left testicle which gave great relief.

December the 12th.—The fourth and last sitting took place this day. One small fragment was seized and broken—the only one which remained of the stone which, in three days subsequently had completely come away. Every symptom of irritation in his bladder disappeared, he passed water with the greatest freedom on all occasions, and the most careful sounding could not detect the smallest foreign body in his bladder. All through the treatment of this case the patient was sustained with generous diet, and a liberal allowance of wine and brandy, and at the same time his nervous system was soothed by the frequent administration of opium. No fragment was retarded *in transitu* from the bladder, and the operation of removing the stone was crowned with success, notwithstanding the untoward circumstances of the bronchitic attack, and the abscess of his testicle.

The points on which there are differences of opinion are mainly in reference to the after-management of the patient. I must not weary my readers by going through all the various steps of the operation, but shall merely observe that the introduction of the lithotrite requires care and dexterity. Any surgeon who has been in the habit of merely passing catheters or bougies will find it quite a different procedure to introduce the lithotrite. Its peculiar short curve might injure the upper wall of the urethra, if the shaft of the instrument were too suddenly depressed before the beak had been coaxed through the membranous portion. Regarding the

seizure of the calculus, I do not consider it wise for the operator to adhere undeviatingly to any fixed rule, for he will find that sometimes the stone can be caught by turning the jaws of the instrument on it, and at other times by depressing the opened lithotrite to the bottom of the bladder, so that inclined planes are formed, which cause the foreign body to roll into the instrument. I have myself always found it easier to catch fragments of a stone by bringing the lithotrite to them, than by bringing them to the lithotrite. I have always used Henry Thompson's modification of Weiss' lithotrite, and believe it cannot be excelled for lightness, strength, and finish. It can be manipulated as easily as a sound or catheter in the bladder; and when a stone is caught, by merely touching a little spring the action of the screw can be brought into immediate play. The firm hold given to the surgeon by the peculiar cylindrical handle (Mr. H. Thompson's suggestion) is also of the greatest importance. I cannot speak too highly of the flat-bladed lithotrite for grasping fragments. Its construction is such that it is almost impossible for it to catch a fold of the bladder, and equally difficult for it to avoid picking up a piece of stone. It is also sufficiently powerful to break calculi of a moderate size, and it pulverizes to a great extent the fragment it lays hold on.

Two of the greatest lithotritists of the present day, Sir Wm. Fergusson and Mr. Henry Thompson, differ in opinion respecting the removal of fragments after crushing. The former advocates taking them away by instrumental interference; the latter advises that they should be broken small enough, and permitted to be washed out by the urine. I certainly must pronounce in favour of the latter mode, for it would be impossible to bring out sharp and irregular pieces without more or less injury to the urethra, while the searching about in the bladder must be an unnecessary infliction of pain to the patient. The large sizes of the fragments which are passed is remarkable, and the various shapes which we should think most likely to become arrested in their course, as they travel through without a stop, excite wonder. The lithograph, Plate I., will assist in realizing this, as the fragments above and below the great mass of detritus are delineated in their natural shapes and dimensions, as they were passed by the gentleman, Case I., while it also shows the nucleus (*a*) as it was expelled. It is strange how small the advantage is of washing out the bladder. I have never seen any considerable amount of detritus brought away in this manner. Although I have frequently drenched the bladder, I

was never able to remove a fragment of any magnitude. A small quantity of fine detritus may occasionally be carried out in this way, but as a general rule the effect is *nil.* It is hard to say whether it may not be that the large eyes of the evacuating catheter do not come to the proper level to allow of the entrance of fragments, for I have frequently seen pieces passed by the patient that could easily have gone into and through the catheter, and after all were not removed by it. In the after-treatment of the patient it is a matter of the greatest importance to ascertain whether the bladder is *perfectly* freed from all traces of the stone. When vesical irritability has subsided, and even when a sound has been introduced and moved in every direction in the bladder without feeling any fragment, still some minute portions may remain without detection by the instrument. Of course freedom from pain, and less frequent calls to pass water, are strong proofs that all is right, but I have remarked that one of the best proofs of a complete cure is afforded when the patient is at *all times* able to make water in a large uninterrupted stream. I have noticed that when a piece is left behind, the patient may occasionally micturate with the most perfect ease and freedom, but at other times he finds he cannot make water for a moment or two, and that the stream, when it begins to flow, does not come with force. As long as a patient is in this condition I believe the surgeon cannot safely declare him *cured ;* and I should advise him at this juncture to direct the patient to retain his water for about three-quarters of an hour (as a small quantity renders it easier to come in contact with fragments), and to introduce the flat-bladed lithotrite instead of a sound, so that by turning it in every direction the little offending piece may eventually be felt. It is often caught by turning the blades of the instrument downwards, and picking the fragment up whilst in this position.

As regards the constitutional treatment of the patient, a word or two may be added. The free administration of opium, in the form of a suppository, or given internally, is of the greatest advantage throughout the entire conduct of the case. Along with this I have seen much benefit accrue from a moderate allowance of wine. An aged patient is frequently observed to become disheartened and depressed, and may often be invigorated by the use of wine; not neglecting the opium, in order to relieve pain, procure sleep, and allay irritability of the nervous system.

ART. II.—*Notes in Medicine and Surgery*—IV. By PHILIP CRAMPTON SMYLY, M.D., Univ., Dub.; F.R.C.S.I.; L.C.P.I.; Surgeon to the Meath Hospital and Co. Dublin Infirmary, and to the Institution for Sick Children, Pitt-street.

1. A LARGE OVARIAN TUMOUR; OVARIOTOMY; RECOVERY.
2. TWO CASES OF STRANGULATED FEMORAL HERNIA, COMPLICATED WITH IRREDUCIBLE OMENTAL HERNIA, OF MANY YEARS STANDING; OPERATION TO RELIEVE THE STRANGULATION; OMENTUM CUT AWAY; RECOVERIES.
3. FORCIBLE FLEXION FOR ANCHYLOSIS OF THE KNEE-JOINT, OF TWO YEARS' STANDING; RECOVERY, WITH USEFUL LIMB.
4. COMPOUND FRACTURE OF THE CLAVICLE—SAID TO BE A VERY RARE ACCIDENT.
5. A MODE OF FIXING THE LARYNX WHILE OPERATING WITHIN ITS CAVITY, IN CONNEXION WITH LARYNGOSCOPY.

1.—OVARIOTOMY—RECOVERY.

"OVARIOTOMY is comparatively a new operation. Unlike lithotomy, herniotomy, or amputation, it wants the guidance, and is free from the trammels of tradition or long history. It is hardly fifty years since it was first performed; not forty since Lizars first attempted it in Great Britain; not twenty-five years since its first performance in a London hospital; there are still many hospitals in this kingdom in which it has never been peformed; and there are some few men of eminence and authority in this country, and very many more abroad, who still regard it as an operation which is never justifiable under any circumstances."[a]

This being the case, it is the duty of every surgeon who performs the operation to lay before his brethren his experience as he gains it. Cases, simply related, when successful, may guide others to success; when unsuccessful, may save others from similar misfortunes.

It is needless for me to enter either into the history of the operation or the pathology of the disease.[b] It is sufficient at present to say that Mr. Spencer Wells took up ovariotomy when the highest and best of our profession looked upon it as very little short of criminal to

[a] Diseases of the Ovaries, by T. Spencer Wells. 1865.

[b] See Dr. Ritchie—Ovarian Physiology and Pathology. London: 1865.

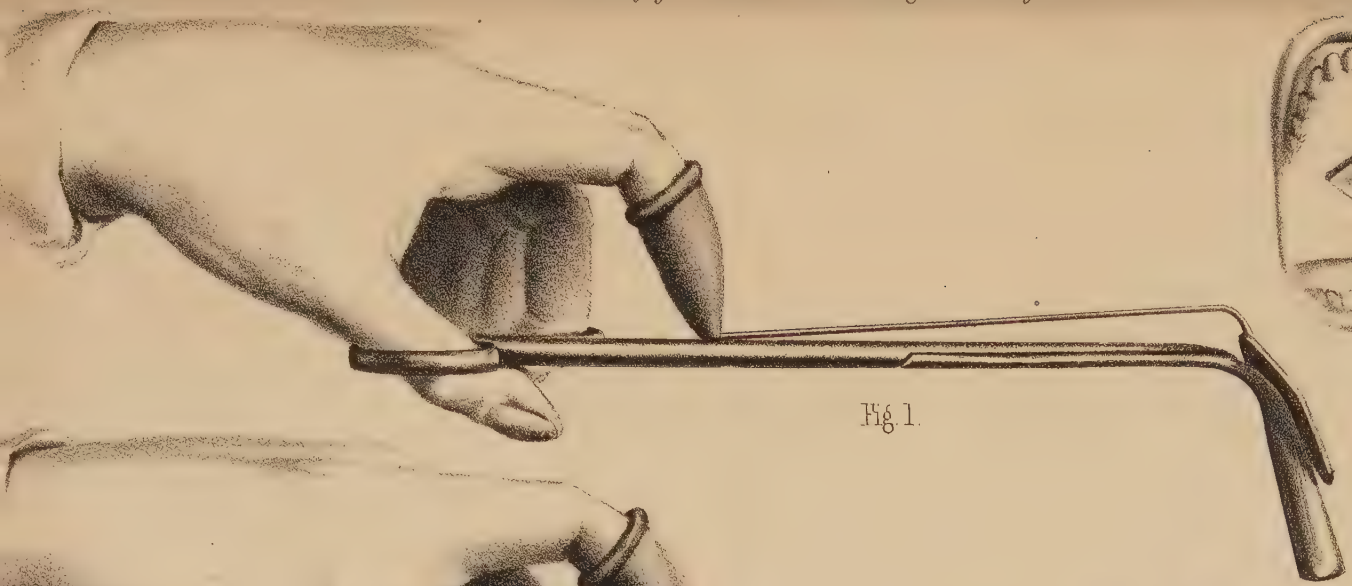


Fig. 1.

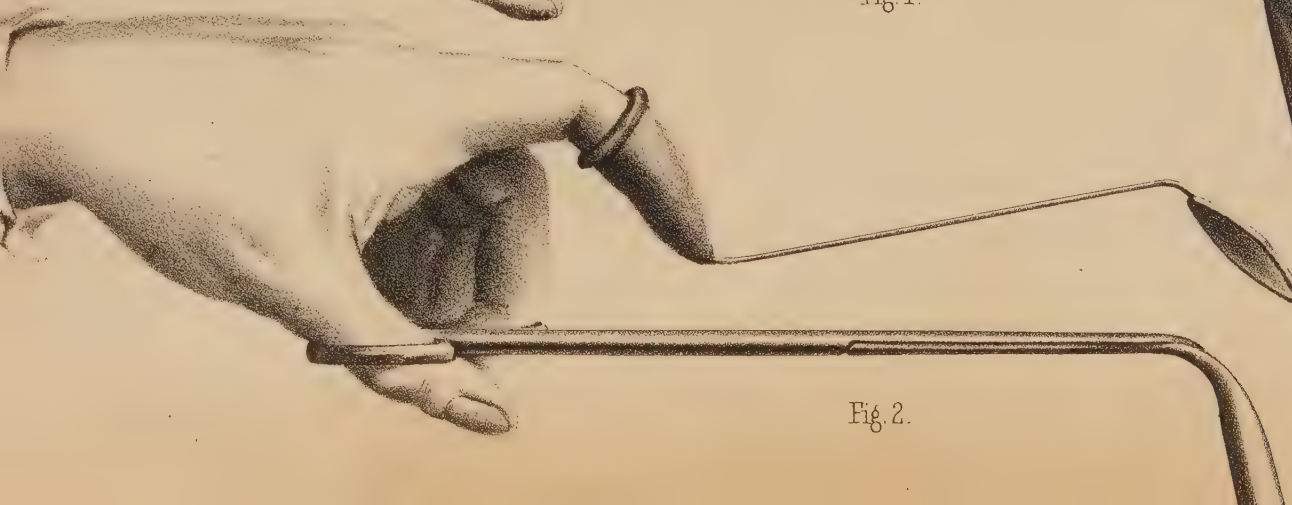


Fig. 2.

Fig.

attempt; and has raised it to even a more favourable position, with regard to the rate of mortality, than many of the operations hold that are sanctioned by daily usage.

Case.—Miss S., aged forty.—About two years ago Miss S. had her attention called to the unusual size of her abdomen. She had never felt pain or distress until after a long and trying attendance on a relative, when she began to lose flesh and to look delicate.

Finding that the swelling of the abdomen was increasing, and that her feet and ankles also had swelled, she sought medical advice.

Diuretics, continued for a short time, completely removed the swelling of the lower extremities, but made no impression upon that of the abdomen. She was then given medicines, which she said were intended to purge her, but they produced violent vomiting. In spite of this active treatment the abdominal enlargement rapidly increased.

She then came to town, and I saw her shortly after her arrival. She was thin and pale, without appetite; bowels costive; had not made water for two days; the menses had ceased for three months, but had returned slightly on her arrival in town; and she had some swelling of the ankles.

Her abdomen was very large and tense, dull on percussion everywhere except just below the false ribs on either side. There was a distinct wave from side to side. The integuments, though very tightly stretched, could be freely moved and pinched up between the fingers over every part of the tumour. When the patient was directed to make an effort to sit up the recti muscles stood out, distinctly over the tumour.

The swelling was nearly symmetrical, slightly larger on the left side. Miss S. stated that she had never observed any difference, and she had no idea from which side the disease started.

Believing the case to be one suitable for operation, I called in Dr. Churchill and Mr. Porter, who saw her separately, and both came to the same conclusion, namely, that the disease was ovarian dropsy, and that the case was a favourable one for the great operation.

The family history was not very favourable. Her father died of kidney disease at ninety, her brother died of the same disease at forty-four, and one sister died of cancer at fifty.

Dr. Churchill made a very careful examination, and pronounced the uterus movable, and as far as he could judge, of a natural size. The urine was free from albumen and from deposits.

The dangers and advantages of ovariotomy, as compared with paracentesis, having been fully explained to the patient, she determined, after consulting with her friends, upon undergoing the operation.

On Saturday morning, the 18th of November, I operated, assisted by my colleagues, Mr. Porter, Mr. Collis, Mr. Wharton, and Mr. Rawdon Macnamara, and my friend Dr. Churchill.

Mr. Macnamara gave the chloroform; and I must here call attention to the great importance of having an experienced chloroformist for this operation. When the chloroform is carelessly given the operator is at one moment embarrassed by the convulsive movements—at another he is alarmed by the deep snoring of the patient. In the present instance the patient never moved, had no nausea, and knew nothing of the operation till some time after she had been settled in her bed.

The patient being dressed in a long flannel dressing gown, flannel drawers, and woollen stockings, was laid upon the operating table. The India rubber sheet recommended by Mr. Spencer Wells was adjusted to keep the patient clean and dry, and the chloroform administered.

An incision, about three inches in length, extending downwards to within two inches of the pubes, brought the linea alba into view. This was hooked up; a small opening was made to introduce a broad flat director, and was slit up to the full size of the first incision. Some layers of fascia were divided in succession in the same way, and finally the peritoneum.

The white shining surface of the tumour was thus brought into view. Mr. Wells' improved trocar and canula was then plunged into it, and the fluid allowed to escape through the India-rubber tube into a vessel under the table. As the sac gradually emptied it was drawn forwards with a vulsellum, and secured by means of two armed claws attached to the sides of the canula.

Gentle traction was made, and the sac came out without any trouble. As soon as the pedicle was brought into view, and it was ascertained that there was not much, if any, strain on the uterus, the clamp was firmly secured, the pedicle cut close to it, and the handles removed. Not a drop of blood oozed from the cut surface, though there were many large vessels in the pedicle.

The wound was closed with five silk sutures, passed from within through the peritoneum, muscles, and skin on either side. All the ligatures were introduced before any of them were tied; the advantage of this is that the wound may be opened again, and any drops of blood carefully sponged away, before the edges are finally brought together.

The clamp seems to me infinitely preferable to the cautery, which often necessitates dissecting out, and tying the vessels afterwards.

A small piece of lint was placed under each end of the clamp, and another over the wound. The India-rubber sheet was then removed, and the abdomen was covered with several layers of cotton wool, secured by long strips of adhesive plaster. A double flannel binder from the hips to the breasts, firmly applied, made all safe.

The patient was then gently lifted into her bed (which had been previously warmed) and was surrounded with hot water bottles. On recovering from the chloroform, she was given some hot beef-tea, with a tablespoonful of brandy.

The tumour consisted of a trilocular cyst—the largest of which contained seventeen and a half pints of thick brown fluid; the other two were small, one containing about a pint, the other about half a pint of fluid. The sac was not weighed, as it contained no solid matter whatever.

Dr. Barker, to whom I gave the sac for the College of Surgeons Museum, says, "The ovarian tumour which you sent to the College last month was remarkable for its smooth, glistening, and white surface, presenting no inflammatory action on its surface."

In the evening her pulse was 120; she had been in a copious perspiration the whole day. At 9 o'clock, p.m., she got a draught containing thirty drops of liq. opii. sed. She got no refreshing sleep through the night. The whole of Sunday she was perfectly tranquil until about 2 o'clock on Monday morning, when the nurse sent for me, saying that Miss S. was in great pain. I found her in great distress, complaining of severe pains in the *stomach*, great thirst, and her pulse 150.

The pain I found was entirely due to flatulency, and was easily relieved by a little rubbing with the hand, without loosening any of the bandages. Finding that she had had no sleep, I sat down beside the bed to see if I could find out a cause. In the course of the first ten minutes the nurse woke the patient three times. She

was at once sent to bed, and I sat by Miss S. for the rest of the night. The patient slept for four hours and a half, and woke with her pulse 90, her countenance calm, and was altogether refreshed.

The nurse was at once dismissed, and I was fortunate enough to secure the services of Mrs. Farrell, who has been most efficient.

The urine was drawn off every three or four hours. It was clear and copious for the first forty-eight hours. On Monday it became somewhat turbid. On Tuesday it was less in quantity, with copious brick-dust deposit. On Wednesday (the 5th day) the first urine in the morning was very scanty, high-coloured, and with a great deal of deposit.

On Monday, Tuesday, and Wednesday there was considerable distress from flatulency—the whole abdomen became distended. On Tuesday there was some pain, which was relieved by three grains of opium, given in half-grain doses every hour or two. The flatulency was relieved by introducing a large catheter into the rectum from time to time, as suggested by Dr. O'Beirne[a] in his valuable work on defecation ; mustard, turpentine, &c., having completely failed to give any relief.

The sutures were all removed on the 23rd of November (the 6th day), and the wound was found completely united down to the edge of the clamp. The dry portion of the pedicle was then cut away, and the clamp opened and removed. Finding that the withered part of the pedicle, which had been pressed in the clamp, was inclined to retreat within the wound, I placed a ligature round it.

On the 25th her pulse was 90. There had been a fluid motion from the bowels through an India-rubber tube.[b] The abdomen was quite flaccid, and there was no flatulency. On the 26th the urine was copious, without deposit, and of a natural colour, but had a very strong fetid smell, similar to that of the lint removed from the open part of the wound. A carrot poultice applied to the wound, and frequently changed, in about twelve hours completely removed the smell.

On the 29th the urine again had the putrid smell, which was corrected by applying a lotion of Condy's disinfecting fluid to the wound. On the 4th of December the rest of the pedicle came

[a] It was rarely necessary to pass the tube beyond the sphincter ani, except on one or two occasions, when it was necessary to pass it up about six inches.

[b] The tube alluded to in the text is a simple India-rubber tube, with the nozzle of an enema machine attached to it. It was found very useful for allowing the flatulency to escape, and saved the bed from being soiled.

away. She was ordered a teaspoonful of castor oil, as the bowels had not been moved for ten days. Two hours after the medicine acted, bringing away a quantity of hardened feces.

Dec. 12.—The wound was almost quite healed, and Miss S. sat up for four or five hours. The bowels acted without medicine nearly every day.

On the 14th she walked about the bed-room with a little assistance, and sat up the whole day. She had no sensation whatever in any part of the abdomen.

Dec. 16.—She was brought down to the parlour; and on the 18th of December, four weeks and three days after the operation, she took her first drive. She walked to the carriage, drove for more than two hours, walked from it again into the house, and suffered no uneasiness whatever.

2.—Two cases of strangulated femoral hernia, etc.

The two following cases occurred within a few weeks of each other, one in private and one at the hospital. The similarity of the two cases is very curious. In both the strangulation of intestines had been over three days. In both the omentum had been irreducible for many years (for eight in one case, nine in the other). The only material difference between the two cases was that the sac in one was a mere membrane, in the other it was very thick and dense.

Case I.—Mrs. T., aged sixty-five, was taken ill on Monday, July 31, 1865, with violent pain in the stomach and bowels, and with violent vomiting. Dr. —— gave her saline draughts for two days, but without giving her any relief.

On the following Wednesday evening I saw her, and found her vomiting everything; she had had no evacuation from the bowels since Monday. Suspecting strangulated hernia, I insisted upon an examination.

In the left groin I found a tumour about five inches in length and about four inches across; two above and two below Poupart's ligament. It was firm and dense, except at the inner side next the pubes, where it was springy, soft, and tympanitic. Perceiving that I was carefully examining the swelling, she said:—"That has been there for more than nine years, and has not been either larger or smaller for a very long time, and has nothing to do with the present attack." I tried taxis for some time and the warm bath, but

without effecting any reduction; and as the latter had given some relief, and the vomiting had ceased, I left her until morning, with a linseed poultice over the tumour.

In the morning, finding that the vomiting had returned, and the tympanitic portions of the tumour had not altered, I determined to operate.

Assisted by Mr. Porter, I operated on Thursday morning (the fourth day of strangulation).

A single incision was made across the tumour, over the femoral ring, about four inches long. The fasciæ were divided, and the sac was opened as usual, and the stricture divided directly upwards with Weiss' hernia knife.

The strangulated intestine was reduced with some difficulty. The omentum was firmly attached to the ring, so that reduction was out of the question. I therefore ligatured the mass close to the ring with a strong silk cord, and cut the whole away close to the ligature (about five ounces).

The wound was closed with two points of wire suture. She was ordered half a grain of opium every hour. The vomiting ceased immediately after the intestine was reduced. The bowels were freely moved two hours after the operation, and several times in the course of the day.

She had not a single bad symptom afterwards. The ligature round the stump of the omentum came away on the twelfth day, and the bit of slough came away next day. On the fifteenth day after the operation Mrs. T. was up and walking about. I got her a well-fitting double truss, and she is now able to walk as well as ever, and is in perfect health.

Case II.—reported by Mr. Duke, Resident Pupil.—"Margaret O'S., aged forty-five (more likely sixty), married, and the mother of four children, was admitted into the Meath Hospital about twelve o'clock on Tuesday, September 26th, suffering from strangulated femoral hernia in the right side.

"About eight years ago she had a bad cold; and, after a severe attack of coughing, she felt a 'little lump' in her groin, but did not know what it was until six months afterwards, when she went to one of the surgeons of Mercer's Hospital. He told her what was the matter, and ordered her to wear a truss, but she was never able to do so, because it 'used to cut her.'

"She was always able partially to reduce the hernia until Sunday last, when she had eaten 'a heavy dinner of cabbage, and taken a

couple of glasses of porter.' The same evening she was attacked with severe vomiting, which continued all that night and next day. Tuesday morning she called in Dr. Moore, who sent her into hospital.

"Mr. Smyly saw her shortly after; and, finding reduction impracticable, operated at four o'clock."

The operation was as follows:—The skin and fasciæ were divided in the usual way, by a perpendicular incision, and the sac exposed. The stricture was then divided, and some intestine reduced; but, as there was much omentum that could not be reduced, it was thought better to lay open the sac. Some hardened omentum was found firmly adherent round the neck of the sac. This was securely ligatured and cut away (℥i. ℥ii. ss.). As the opened sac then looked large, and its walls were very thick, it was thought better to remove some of it. This was done by cutting, with a pair of scissors, about quarter of an inch from the opening of the ring; the wound in the skin was then closed with three points of wire suture. Report continued:—

"The patient was then placed in bed, and was given small quantities of wine and brandy, and half a grain of opium every hour. Her pulse, after the operation, was 160, and rather feeble.

"Wednesday 27th.—Slept well last night, having taken five pills; tongue, white; pulse, 140; bowels not moved; ordered an enema, which had no effect; another in the middle of the day, and a third in the evening; the latter acted pretty well.

"Thursday 28th.—Slept a good deal through yesterday, and not so well last night; slight discharge from the wound; two of the sutures taken away; tongue same as yesterday; pulse, 123 in the morning, and in the evening 118 in the minute; no motion from the bowels; ordered a cough bottle, as she has a very troublesome cough.

"Friday 29th.—The patient had a good night, and the bowels were relieved this morning; pulse, 112; the remaining suture was taken out this morning; some discharge from the wound; the same dressing continued—a pledget of wet lint, and a towel laid over it; the lint was changed morning and evening.

"Saturday 30th.—Her tongue was cleaner this morning; pulse, 100.

"From this the patient improved steadily. The ligature round

the omentum came away on the 13th of October. She left the hospital quite well the first week in December."

3.—FORCIBLE FLEXION OF THE KNEE FOR ANCHYLOSIS IN THE STRAIGHT POSITION.

In February, 1863, Miss W—— came to me with an introduction from my friend, Dr. Smith, of Borris-in-Ossory.

She had suffered from a violent attack of rheumatic arthritis some years before, when abroad. The limb had been fixed in the straight position, and had become perfectly anchylosed. There was not the slightest motion in any direction, and the patella was firmly attached. She had had no pain for a very long time; and there was not the least evidence of any present inflammatory action. The measurement of the affected knee exceeded that of the healthy one by about an inch and a-half.

Miss W—— complained bitterly of the constant source of vexation her stiff knee was to her. She could not walk any distance on account of the fatigue caused by swinging the limb round to place it in front of the other; she could not sit down with comfort except on a very high seat; she could not kneel; and she could get up stairs only by "putting her best foot foremost," and dragging the stiff one after her.

Under these circumstances I advised her to have the joint forcibly flexed, and then to employ passive motion.

I found that my views coincided with those of my friend, Dr. Smith. Subsequently Mr. Collis saw Miss W——, in consultation, and he also considered the case a favourable one for operation.

Assisted by Dr. Smith and Mr. Collis, I operated as follows:—

I first bandaged two strong iron splints, well padded with cotton wool, to the thigh—one in front and one behind—extending from about half-an-inch above the point I wished to effect the fracture to the groin in front, and as far behind. This was to avoid the danger of breaking the thigh bone instead of the knee.[a] Miss W—— was fully chloroformed and drawn down on the table, so that the end of the posterior iron splint rested exactly on the edge. Mr. Collis with both hands propped firmly on the anterior splint.

I grasped the foot with my right and placed my left hand about

[a] On two occasions I was present when femur gave way in the middle—one was forcible extension, the other forcible flexion.

the middle of the tibia. By throwing the whole weight of my body on my left hand I succeeded in breaking through some of the adhesions. This process had to be repeated three times before the knee could be bent to a right angle. Each time the adhesions gave way with a loud crunching sound. The thigh splints were then removed, and the limb placed in a long jointed splint, with a screw behind, and lightly bandaged—the leg and thigh being left at an angle of about forty-five degrees.

The knee was kept constantly iced for forty-eight hours, and the foot kept warm.

Every day the position was slightly changed, so that towards the end of the week the limb was again straight. The screw was then slowly tightened, several times a day, until, in about three days, the leg and thigh were nearly at a right angle. For about six weeks this gradual process of flexion and extension was persevered in; then the splint was removed, and Miss W—— was allowed to get up. She was desired, always, to sit on a low chair and to try and strain the foot backwards so as to touch the leg of the chair.

Miss W—— then returned to the country and has enjoyed perfect health ever since. Her present state I cannot better describe than by giving the following extracts from Dr. Smith's letters, dated November 22nd and 28th, 1865, nearly two years after the operation:—

"My Dear Sir,—You may make what use you please of my name in reference to Miss W——'s case in publishing your report of it.

"About two years before Miss W—— consulted me she had an attack, while in France, of what I took to be rheumatic arthritis of the affected joint, which ran a severe course, the limb ultimately being put up, by her medical advisers, with the view to establish a stiff joint as the best result to be expected, which probably at that time was sound practice enough. However, at the end of two years, all inflammatory tendency having subsided, I considered it a suitable case for forcible flexure, and with the object of putting my views in force, called in two medical men in the country, one after the other, to assist me in the operation—one, a man of very large reputation—but both positively refused, fearing results; and Miss W—— was about to abandon all thoughts of ever having the use of her limb restored, were it not that I still maintained my original opinion, and insisted on her having further advice. I first sent her

to Dr. —— who kindly examined the case for me, and coincided with me in the opinion that it was a case for operation. However, I thought he showed a reluctance to enter into it. I then asked you to see her, and you at once entered most kindly, heart and hand, into it. What followed is so well known to you as to require no comment from me further than to say—I saw Miss W—— very lately, and a more complete and perfect success could not follow in any such case. In fact, she has as good use of that knee as of the other—can take long walks, dance, run, or exercise in every way as freely as before the joint became affected.

"I remain, yours faithfully,

"HENRY J. SMITH."

4.—COMPOUND FRACTURE OF THE CLAVICLE; RECOVERY.

Compound fracture of the clavicle is a very rare accident, though from the closeness of the bone to the skin its frequent occurrence might be expected.

The following notice of the accident may be found in Professor Hamilton's valuable work on fractures, published in 1860:—

"I have never seen a compound fracture of this bone, although in many cases the sharp point of an oblique fracture has seemed just ready to penetrate the skin.

"One case is reported as having been presented at St. Bartholomew's Hospital. It occurred in a boy, fourteen years' old, and was produced by his having been drawn into some machinery while in motion. Seute also mentions a case, seen by himself, occasioned by the fall of a derrick upon the shoulders. . . .

"Ayres mentions another case, the result of a severe gunshot accident, in which the bone was also much comminuted."

The three cases described by Hamilton were all the result of direct violence. The following case I believe was caused by *contre-coup*:—

CASE, reported by Mr. Percival, resident pupil.—"Bridget R., aged sixty, was admitted into the Meath Hospital, between one and two o'clock on the morning of the 6th of August, 1865. She stated that as she was stepping from the footpath to cross the street, she was seized round the neck by a man and thrown down with great violence to the ground. She fell on her left shoulder,

and *heard* the bone crack. She vomited immediately after the accident. When she arrived at the hospital about three quarters of an inch of the acromial end of the clavicle was found protruding from a wound in the skin corresponding to the middle of the bone."[a]

Mr. Percival sent for me at once, being on accident duty at the time.

The patient was lying in bed, Mr. Percival having reduced the displaced bone, and secured the arm in the usual position for fractured clavicle.

I found a lacerated wound, corresponding to the fracture, large enough to receive the point of the little finger. On sponging away the blood, which oozed slowly from the wound, I ascertained that the fracture distinctly communicated with it. A compress of lint was placed over the wound, and the fracture was treated as a simple one. She was discharged, well, in six weeks.

5.—A mode of fixing the larynx.

"Necessity is the mother of invention." I know not whether any fellow-labourer in the field of laryngoscopy has hit upon the plan about to be described for supplying the want of a third hand—a deficiency often much felt by the operating surgeon.

A case lately came under my observation of numerous small polypi in the larynx, at the base of the epiglottis. The patient was tongue-tied, had a very large tongue, an epiglottis that almost touched the back of the pharynx, even during phonation, and the larynx very deeply set in the throat. The practical laryngoscopist can alone realize what difficulties these were.

At last I hit upon the following plan :—Mr. Fannin got a forceps made for me with broad blades, bent as shown in the lithograph, to dilate the larynx and raise the epiglottis. This is held by the thumb being passed through one ring, the little finger through the other. The second and third fingers rest on the side to steady the instrument.

The stem of an ordinary faucial mirror, out of one of Weiss' cases, is bent, and the bent part beaten out flat, to prevent it turning on the finger. This is attached to the index finger by an India rubber nipple. Thus the left hand is armed with a dilator and mirror, leaving the right hand free for action.

[a] The policeman swore to two inches on the trial.

Fig. 1 shows how the hand should be held before the dilator and mirror are introduced.

Fig. 2 shows them when introduced, the mirror being raised against the palate.

Fig. 3 shows the view the operator gets of the points of his dilator and the field for action between them.

ART. III.—*On Typhoid Pneumonia Associated with Muffled Tympanitic Resonance, with Cases.* By THOMAS HAYDEN, F.R.C.S I.; L.K. & Q.C.P.I.; M.R.I.A.; Physician to the Mater Misericordiæ Hospital.

IN the course of the past Winter I have had under treatment in hospital several cases of pneumonia, two of which possess considerable interest, as presenting features of an unusual character and great difficulty in the interpretation.

I will submit these cases in detail, together with two others which in some measure illustrate them, with such remarks as may seem applicable.

Typhoid Pneumonia Engaging the Superior Lobe of the Left Lung, in which Tympanitic Resonance was Developed on the Fourteenth Day of Illness, Successfully Treated with Alcohol and Small Doses of Quinine.—Sylvester Dempsey, aged forty-six years, a labourer employed in sulphuric acid works, where he was engaged in making "salt cake," was admitted into hospital May 24, 1865. On the preceding Saturday (May 20) he was attacked with pain in the left side, and on the following Monday was forced to relinquish work. On admission the skin was hot; tongue dry; pulse 108, full and soft; teasing cough, attended with pain in left side; and expectoration of rust-coloured sputa; upper and anterior portion of left side perfectly dull, and without respiratory murmur, or other respiratory sound of any kind; infero-anterior, lateral, and whole of posterior surface clear, as likewise was right side, and yielding respiratory murmur throughout. To be cupped to three ounces under left clavicle, and have one grain of sulphate of quinine, with four minims of sulphuric ether, and two of dilute sulphuric acid in water every third hour; strong beef-tea *ad libitum*, and three ounces of wine daily.

May 28.—Inflammation has extended downwards, engaging the entire of the anterior surface of the lung, as low as the sixth rib; left side of chest generally dull in front, to a point below the nipple, but clear behind a line extending obliquely downwards and forwards from the posterior fold of the axilla; pulse 90 and occasionally intermitting; heart's action corresponding, but otherwise normal; sputa "rusty;" tongue dry; features haggard and shrunken; to be cupped to three ounces in mammary region, and have, within the next twenty-four hours, ten ounces of whiskey and six of wine at intervals; quinine and beef-tea, with arrowroot, to be continued.

May 29.—Respirations 30; pulse 72, *not* intermitting.

June 1.—Progressing favourably; tongue now clean; pulse 72, full, regular, and not intermitting; respirations 30; returning vesicular breathing in apex of lung, with feeble and sparse crepitus. In mammary region bronchial respiration with muco-crepitus; general dulness in front; resonance behind, as on the 28th of May.

June 3.—Tongue clean; pulse 72; respirations 24; dulness in front less pronounced; in sub-clavicular region it is modified by a peculiar resonance of a somewhat tympanitic character, but from the clavicle to the sixth rib a crepitus is still audible, beneath the clavicle only at end of full respiration. Treatment continued, with exception of whiskey which was reduced to five ounces.

June 5.—Pulse 66; respirations 18; a coarse systolic murmur of a rubbing character, heard in second left intercostal space, near the sternum.

June 6.—Pulse 60; respirations 18.

June 8.—Pulse and respiration as on the 6th; tongue clean. A loud grating friction both heard and *felt* over base of left lung posteriorly, and bronchial respiration in left supra-spinal fossa.

June 12.—Pulse 60, full, strong, and regular; first sound of heart rather prolonged, and attended with a soft murmur over left base; whole of left side comparatively dull in front, with muco-crepitus inferiorly; pleuritic friction audible over greater part of same side posteriorly; appetite good; sleeps well. Discharged this day.

This was a case of typhoid pneumonia engaging the superior lobe of the left lung, and complicated, towards the close, with pleuritis without effusion, and a slight attack of pericarditis. The work in which the man had been employed was well calculated to deteriorate his health.

The inflammation, as is usual in typhoid pneumonia, invaded first

the apex of the lung, and then slowly travelled downwards, involving, however, only the superior lobe, and at no period extending to the posterior-inferior portion, or inferior lobe of the lung. Are we to seek, in this latter circumstance, an explanation of the tympanitic resonance, or rather that remarkable modification of dulness which might be expressed by the designation of "resonant dulness," which became developed on the 3rd of June, *i.e.*, thirteen days after the commencement of the attack? According to Skoda the answer to this question should be in the affirmative; as he holds that the presence of a substratum of healthy lung, freely permeated by air, is capable of communicating a modified resonance of a somewhat muffled character to a solidified portion interposed between it and the chest-wall subjected to percussion. On theoretic grounds this explanation might be deemed satisfactory. There can be no doubt that the presence of a stratum of healthy lung tissue, freely permeated by air, subjacent to a solidified and non-resonant portion, does modify in a marked degree the dulness of the latter, the percussion note yielded by which is of a compound character, representing, in the proportions in which they are relatively present, the two elements of which it is composed.

It will appear, however, on reference to Case No. II., that the phenomenon of modified tympanitic resonance in a solidified lung cannot be attributed to this cause exclusively; in that case, although the entire lung was hepatized the phenomenon was developed even in a higher degree than in the case now under consideration; whilst in Case No. III. all the conditions required by Skoda's doctrine for the production of resonant dulness, namely—a solidified lobe overlying one in a healthy condition were supplied, yet the phenomenon did not exist.

From these cases, therefore, the conclusion to be arrived at would seem to be, that although in a partially hepatized lung in which the solidified portion has a substratum of healthy pulmonary tissue, the percussion-dulness of the former may be modified by the resonance of the latter, in such a manner as to give rise to a hybrid sound of a very remarkable character; this phenomenon may be present where the entire lung has become solidified; and again, that it may be absent where a healthy and a solidified portion of lung-tissue occupy the relative positions mentioned.

The absence of respiratory sound, both vesicular and bronchial, noticed on the 24th May, over a region in which dulness was complete, deserves a moment's attention.

According to Dr. Stokes[a] the absence of bronchial respiration in a solidified lung, without liquid effusion, should be accounted for by fixity or non-expansion of the side, resulting from engagement of the entire lung.

Grisolle[b] admits the occasional absence of crepitus and "all respiratory sound" in the second stage of pneumonia, and he has made some observations to show that this is due to softening or defluence of the lung, by which the tubes are closed as a consequence of collapse of their walls; he states, moreover, that he has met with three cases in which the entire lung was solidified, as proved by *post mortem* examination, and yet bronchial respiration continued up to the time of death.

In the case of Dempsey one lobe of the lung only was hepatized, still both bronchial and vesicular breathing were temporarily absent in the affected portion; and its subsequent history, ending in recovery, suffices to exclude the assumption of softening or defluence in the sense in which it is put forward as an explanation by Grisolle.

If the negative phenomenon of total suspension of breathing-sound, associated with percussion dulness and the general symptoms of pneumonia, had been presented in the base of the lung where pneumonia is most frequently met with, the diagnosis of pleuro-pneumonia with effusion would probably, according to accepted rules, have been arrived at; and yet that diagnosis would have been incorrect in one particular. No doubt the treatment would have been all the same, and the diagnosis corrected on the following day, still the latter would have been, *pro tanto*, erroneous in the first instance.

On the 28th of May the patient's condition was most unpromising, as indicated by shrunken features, dry tongue, and a weak and intermitting pulse. The favourable change noticed on the following day must undoubtedly be placed to the account of the whiskey (℥x) given within the preceding twenty-four hours; the pulse had come down to 72; now no longer intermitted; and the patient's general condition was perceptibly better.

The late Dr. Todd[c] declared, "in the treatment of pneumonia I do not consider the administration of alcohol essential, but rather regard it in the light of an important accessory." It is doubtful,

[a] Diseases of the Chest, p. 326.
[b] Traité Pratique de la Pneumonie.
[c] Clinical Lectures. By Beale.

however, that in the treatment of typhoid pneumonia at least, a substitute, and of equal efficacy, can be found for alcohol.

As regards the administration of sulphate of quinine in the treatment of pneumonia, first recommended by Dr. Corrigan,[a] in the asthenic form of the disease, I cannot form an estimate of its value from the few cases I have treated with it. In no instance have I given it in the liberal doses recommended by Dr. Corrigan, and in which he so successfully administered it. I have not exceeded three grain doses, in which quantity it was given every third hour in Case No. III.

Dr. Flint[b] has given sulphate of quinine in thirty-three cases of pneumonia, of which three only were fatal. The general result has been, in his practice, a notable decrease in the rate of the pulse and respiration.

As to the specific action of quinine in pneumonia Dr. Corrigan has given what seems the most rational view of its operation, namely—that in the first stage of pneumonia, when the pulmonary capillaries are gorged with blood as the result of temporary paralysis of the vaso-motor nerves supplied to them, quinine acts beneficially by stimulating the latter, and thereby diminishing the volume of blood circulating through the affected lung. This is, undoubtedly, the *modus curandi* in enlargement of the spleen.

CASE II.—*Pneumonia, with Tympanitic Resonance of the Right Lung; Death.*—James Osborne, aged twenty-six years, of intemperate habits, was admitted into hospital June 9th, 1865. The patient had been in a state of intoxication for several days preceding the above date, so that it was impossible to fix the period of commencement of his present illness.

On the day of admittance the following was his condition:—Pulse 120, sharp and full; respiration 54; skin hot and dry; face pale; unable to make full inspiration owing to pain in right side; dulness considerable, but not complete, over base of right lung both in front and behind. With this exception the right, and the whole of the left lung were normal as regards percussion. Over the base of right lung, to an extent corresponding with that of dulness, respiration was scarcely audible. There was no crepitus or friction to be heard. Scarcely any cough. No characteristic sputum.

[a] Dublin Hospital Gazette, Vol. iii., July 15, 1856.

[b] North American Medico-Chirurg. Review, March, 1861, and Half-yearly Abstract of Med. Science, Vol. xxxiii.

From the preceding symptoms and signs the diagnosis to be formed was manifestly acute pleuritis with rapid effusion; and this was the opinion given. To be cupped to three ounces over the right lung, and have two grains of calomel with two grains of antimonial powder every third hour.

June 10.—Fine crepitus detected in base of right lung. In other respects symptoms and signs as on yesterday. To be cupped again, and continue medicine. Diagnosis corrected.

June 13.—Dulness extends upwards to angle of scapula, and at all points below this level posteriorly, bronchial respiration and crepitus were audible; was occasionally delirious in the course of last night; pulse, 120, and full; respiration 54. Was bled from arm to seven ounces, viz., till the pulse began to fail. A poultice of linseed-meal and mustard applied over right side, and calomel and antimonial powder continued.

June 14.—No material change since yesterday. Gums exhibit the effects of the calomel, which was stopped. To have quinine (1½-grain doses) and sulphuric ether mixture, and three ounces of wine; strong beef-tea *ad libitum*.

June 15.—Pulse 132, and weak; respiration 54; body bathed in cold sweat; jactitation and low muttering delirium. From base of thorax to right nipple there is complete dulness, with crepitus; from nipple to clavicle the percussion note is of a mixed and very singular character; it is that of dulness qualified by a metallic resonance, and communicates the sensation of a solid but resonant body under percussion. Over the region which presents this remarkable modification of dulness respiration is bronchial, accompanied by crepitus on full inspiration. To have one ounce of wine every hour.

June 16.—Pulse 114; respiration 42; tongue moist; otherwise no change.

June 17 and 18.—Whole of posterior surface of right side dull, and here respiration is bronchial.

June 19.—Pulse 150, and full; respiration 60; perspires copiously; has had several attacks of paroxysmal dyspnea since last report; tongue moist and coated in the centre with creamy fur; coughs occasionally, and expectorates viscid uncoloured mucus with much difficulty; right side of chest more prominent in front than left—this difference is more striking if infra-clavicular regions be compared; in this situation likewise, namely from clavicle to fourth rib, there is less respiratory movement on right side than on left;

right side measured under the nipple is nearly one inch in excess of left; a line carried from the apex of the right axilla downwards behind the nipple to the base of the thorax, and another line carried vertically from the fourchette of the sternum to the ensiform cartilage, slightly to the left of the mesial line, would define a space within which percussion-sound was tympanitic, and of a somewhat metallic character—less so immediately beneath the clavicle, and below the nipple, than in the intermediate space, viz., lower and greater portion of sub-clavicular, and upper portion of mammary region, where it was decidedly metallic; the heart pulsates feebly beneath fifth, sixth, and seventh costal cartilages immediately to the left of the sternum; in the course of last night had a paroxysm of dyspnea lasting one hour, which threatened suffocation, and during which his face became livid and his eye-balls prominent. To have four grains of quinine with ten minims of sulphuric ether, and two minims of diluted sulphuric acid in mixture every fourth hour. No hope entertained of patient's recovery.

June 19, 4.30, p.m.—Over entire of posterior surface of right side, which is perfectly dull, a fine crepitus is heard; over the resonant region in front respiration is bronchial, as it has been for the last three days, during which period likewise, and up to the present, a few crepitant râles are heard here when the patient makes a full inspiration after coughing. The left lung which had been resonant, and in which respiration had been hitherto puerile, yielded this morning dulness on percussion over the base, where coarse muco-crepitus was audible. Over both sides of the chest, throughout the patient's illness, vocal vibration was strong and equal, and at no period was there pneumonic sputum.

June 20.—Patient died at eight o'clock this morning. *Post mortem* examination three hours after death, as per notes taken at the time:—Body rigid; face pale; percussion yielded same result as before death, except that tympanitic resonance was a shade less pronounced on right side, which was remarkably prominent. The body was immersed, face upwards, in a leaden vat filled with water. The surface of the water was percussed by resting the dorsum of one finger horizontally upon it, and tapping gently upon the latter with the fingers of the other hand; over the left side of the chest the sound elicited presented nothing to arrest attention; but over the right side, which was placed about an inch and a half below the surface of the water, the sound yielded was decidedly tympanitic, and resembled that heard on percussing a leathern bag

filled with air. The right pleural cavity was now cautiously opened under water by an incision dividing the integument and muscles in the third intercostal space, in a line with the nipple, and by lacerating the costal pleura with the finger. The object of this proceeding was to determine whether the pleura contained free air. The finger was now introduced with some difficulty, owing to firm adhesion between the lung and costal pleura; a portion of this adhesion was broken down in the neighbourhood of the incision, and the lung detached to a slight extent from the chest-wall. The cavity of the pleura was thus laid open, *yet not a bubble of air escaped.* The surface of the lung was next pinched up with forceps through the incision, punctured with a scalpel, and lacerated with the point of the finger, when immediately *bubbles of air freely escaped*, and were witnessed by my colleague Dr. Cruise, and by the class.

The chest was now laid open in the usual manner; the pericardium was found distended with clear serum, and the anterior surface of the heart sparsely covered with minute but firm granulations of recently deposited lymph, more especially at the base, and over the root of the pulmonary artery. There was a good deal of fat in the usual situations on the anterior surface of the heart, which was firm, and of the normal size, or perhaps a little less. Both lungs were extensively adherent to the chest-walls, the right more firmly, and was likewise attached to the diaphragm throughout. The right lung was fully distended so as to keep that side of the chest in a state of maximum expansion; its colour was dark grey, and its anterior edge was thickened and overlapped the pericardium; the pulmonic fissures were obliterated by adhesion. The superior and middle lobes yielded on percussion a *somewhat muffled metallic ring*, a shade less clear than that yielded by the corresponding part of the patient's chest during the three last days of his life; the percussion-note elicited from the anterior edge of the lung *placed upon the hand* was similar, *i.e.*, muffled metallic. Percussion of the inferior lobe, at all points of its surface, yielded a *perfectly dull sound.*

A vertical section was made from apex to base of right lung, from its posterior thick edge in the direction forwards. The sensation communicated to the hand was that of a solid body under incision.

The cut surface was light grey in colour, somewhat darker at the base; no fluid escaped from it, but on pressure with the flat

surface of the knife thin purulent matter streamed out. Placed in water the lung sank at once.

The left lung was universally congested, the apex less so than the remainder. On section a thin frothy serum issued from it; it was resonant on percussion, and floated in water.

A photograph of the right lung has been taken, and copied in the subjoined woodcut by Browne and Nolan of Nassau-street.

Section of lung from behind.—*a a b b*, surface of section of superior lobe of right lung which had yielded tympanitic resonance; the solidification of the pulmonary tissue, and the divided blood-vessels are well represented. The deep congestion of the inferior portion of the lung is likewise seen.

The liver was somewhat larger than natural, and presented on its upper surface several large yellow blotches, not elevated above the surface or irregular; neither was the peritoneum thickened or become opaque over them. These blotches were found, on section, to pass into the substance of the liver a quarter of an inch. I regret I cannot present a report on their structure, examined microscopically, as the specimen intended for examination was unfortunately lost. With this exception the liver was apparently healthy. Other organs not examined.

I have thought it right to give, from my notes taken at the bedside, a detailed account of the progress of this case from day to day,

and likewise of the *post mortem* appearances, because of the interest that attaches to it in connexion with the phenomenon of tympanitic resonance in a solidified lung.

In Case No. I. this phenomenon likewise existed, but in a less degree, in a lung only partially solidified. In that case the hypothesis was at least warrantable, that the resonance yielded by the solidified portion was communicated from that which was in a healthy condition.

In the case just narrated, however, no ground existed for such an assumption, as the lung was hepatized throughout its entire extent. Neither was it admissible to suppose that the phenomenon was due to communicated gastric resonance, for, independently of the fact that it occurred on the right side, it will be remembered that it was manifested only in the upper portion of the lung, where it could not have existed, if transmitted from the stomach, without also manifesting itself in the inferior lobe. Lastly, percussion of the lung after removal from the body afforded convincing evidence that the resonance was intrinsic; a portion of it placed upon the hand, a solid body, and percussed in the usual manner, yielded the characteristic metallic note—resonance of a character similar to that heard during life over the corresponding portion of the chest.

The occurrence of aëriform accumulations, independently of rupture or perforation of the lung, in connexion with acute disease of the organs of respiration, is of great interest, as introducing an element of derangement into the rules of diagnosis of intra-thoracic disease.

These accumulations may be subdivided into two forms, both of which have been fully established, namely, those in the cavity of the pleura, constituting the "simple pneumothorax" of Graves,[a] and the "secondary" form of pneumothorax without perforation of Jaccoud,[b] and those in the substance of the lung itself.

In the two first cases given by Dr. Graves, there can be no reasonable doubt that there had been aëriform effusion into the cavity of the pleura. Of this, the displacement of the heart without liquid accumulation in the former case, and the compression of the lung without liquid distension of the pleura in the latter, afford convincing evidence.

The presence of a cavity in the apex of the lung in the latter case, in the absence of *positive proof* that no communication existed

[a] Dublin Journal of Med., Vol. iv.

[b] Gazette Hebdomadaire, Jan. 29, 1864.

between this and the pleura, may be taken as invalidating, in some degree, the evidence it affords in support of the doctrine of simple pneumothorax by secretion.

Of this form of gaseous secretion into the pleura another indubitable example has been admirably reported by Dr. Little of Sligo.[a]

A case is mentioned by Dr. Stokes[b] of typhoid pneumonia in a female, in which, on the eighth day of illness, the antero-superior portion of the left side, previously dull, yielded a sonorous tympanitic sound on percussion. On the following day resonance had extended to the postero-superior portion of the chest; but on the next succeeding it had disappeared and been replaced by dulness.

In this case, which is given as one of pneumothorax by Dr. Stokes, the character of the resonance described by him as being "similar to what is produced by the stomach in the highest degree of flatulent distention," was different from that observed in my cases, in which it was somewhat muffled.

That there is, however, another cause than effusion of air into the cavity of the pleura, whether by secretion or otherwise, to which resonance over a solidified lung may be due, the cases reported by Dr. Hudson, in his valuable memoir on typhoid pneumonia,[c] afford strong evidence.

The cases now reported go to corroborate the evidence furnished by Dr. Hudson; and the second case carries that evidence a step further, by demonstrating *negatively* that no air existed in the cavity of the pleura, and *positively* that air did exist in the tissue of the lung, in that portion of the organ which yielded resonance both before and after death.

In Dr. Hudson's second case, as in mine, there was at first sharp pain, dulness on percussion, and absence of respiration and of crepitus over the affected portion of the lung—hence, in both cases, the erroneous diagnosis of pleuritis with effusion. Subsequently, the occurrence of bronchial respiration and of crepitus showed the error committed, and pointed out the real nature of the disease.

Morbid clearness was developed in the previously dull portion of the lung, in Dr. Hudson's second case, on the fourth day of illness; in my first case only on the fourteenth day, and in the second on

[a] Case of "Simple Pleuritic Pneumothorax," Dublin Quart. Jour., Vol. xxxvi., Nov., 1863.

[b] Disease of the Chest, Part i., page 334.

[c] Dublin Journal, Vol. vii., July, 1835.

the sixth day. Of these three cases, it continued up to death in the two which were fatal, but in that which terminated in recovery resonance was replaced by dulness on the sixth day from its commencement. In all three cases *bronchial respiration* and *crepitus coincided with tympanitic dulness.*

It cannot be pretended that resonance was due to a central pneumonia in these cases; firstly, because of the *preëxistence* by several days of dulness in the resonant portion of the lung; and secondly, because *post mortem* examination in two of them, in each of which resonance continued up to death, showed that hepatization was *universal.*

In Dr. Hudson's seventh case bronchial respiration and crepitus likewise coincided with resonance, which continued up to death. Thus it would appear that morbid resonance developed in the progress of pneumonia may be associated with bronchial respiration and crepitus, as in the cases above cited; or with total absence of all respiratory sound, as shown by Dr. Graves; and the evidence before us would seem to warrant the conclusion, that upon this distinction may be based the differential diagnosis between resonance due to air included in the tissue of a hepatized lung, and that depending upon aëriform accumulation in the pleura.

Grisolle does not mention percussion-resonance at all in connexion with pneumonia; he only speaks[a] of comparative dulness, and occasional absence of dulness in the pneumonia of children.

Dr. Stokes says[b]:—"But of all these signs the most remarkable is tympanitic clearness over the diseased lung, a phenomenon evidently proceeding from an effusion of air by secretion into the serous cavity." Thus, it would appear that at the date of his great work (1837) this eminent physician, than whom nobody in our day has contributed more to the physical diagnosis of thoracic disease, was still unaware, or at least unconvinced, of the existence of the second form of pneumonic resonance, namely, that *not* depending upon pneumothorax.[c]

Dr. Williams includes amongst the essential and characteristic

[a] Opus citat, pp. 229 and 230.

[b] Opus citat, p. 332.

[c] Since writing the above I have had a conversation with Dr. Stokes, and ascertained his present views on the subject; he now fully admits a *pulmonary,* as distinct from a *pleural* form of tympanitic dulness in pneumonia; he regards it as a sign of formidable import, and believes that it is, when present, invariably associated with the typhoid type of the affection. This was certainly the character of the inflammation in one of my cases, but in the other it was of a more sthenic form

physical signs of pneumonia, "dulness of sound on percussion,"[a] to the presence of which, in the advanced stages of the disease, he makes absolutely no exception, and nowhere mentions tympanitic resonance as of occasional occurrence.

Dr. Fuller in his work, *Diseases of the Chest* (1862), does not allude to tympanitic dulness in pneumonia, and in the two most recent works on the Practice of Medicine, namely, those of Trousseau[b] and of Hughes Bennett,[c] the subject is not adverted to.

As far as I have been able to make out, Dr. Hudson's cases previously mentioned were the first recorded examples of tympanitic resonance in pneumonia, *not due to the presence of air in the cavity of the pleura*, and that Cases II. and VII. in his category, which so closely resembled my second case in all essential particulars, were of this nature, I have no doubt whatever, although he would seem not to have equally satisfied himself upon this point.

Case III.—A tradesman, in easy circumstances and of exceedingly intemperate habits was attacked, about 20th September, with what seemed to be delirium tremens of a low and asthenic form. I saw him on the 27th, with Dr. Cahill of Dame-street, when his condition was the following:—Pulse 150; respiration 42; great dyspnea; face flushed; conjunctivæ somewhat jaundiced; tongue loaded; urine scanty, and tinged with bile. There were insatiable thirst and constant retching. There was tenderness on pressure over the stomach and liver, and the latter was somewhat enlarged. The right side of the chest was dull anteriorly from the clavicle to the mamma; the dulness extended backwards to the axilla, but the postero-lateral and posterior portion of the chest on that side was perfectly clear on percussion. Over the anterior portion, coextensively with the region of dulness, bronchial respiration and coarse crepitus were audible, whilst posteriorly respiration was normal. There was occasional cough with expectoration of viscid rusty-looking sputum. Right side to be dry-cupped; a large warm poultice to be subsequently applied, and then a blister. Sulphate of quinine, 2 gr.; watery extract of opium, ½ gr.; three times a day. Six oz. brandy and beef-tea.

Sept. 28.—Pulse 168; diarrhea and bilious vomiting. Pleuritic

[a] Cyclopædia of Pract. Medicine. Article, Pneumonia, p. 403.

[b] Clinique Médicale de l'Hotel Dieu, de Paris. 1865.

[c] Clinical Lectures on the Principles and Practice of Medicine. Fourth edition. 1865.

friction in postero-inferior portion of right side. Quinine, gr. 3; powder of ipecacuanha and opium 2 grains every fourth hour; ½ oz. of mercurial ointment to be rubbed into axillæ. Bismuth liquor, 30 drops, tinct. opii, 5 drops, in an ounce of water when vomiting was troublesome. Four oz. beef-tea with ½ oz. brandy every second hour.

Sept. 29.—Pulse 168; respirations 42; tongue moist and furred; has taken, without permission, a pint of brandy since yesterday; vomiting checked; diarrhea. Dulness on right side in front from clavicle to nipple, with bronchial respiration and coarse crepitus; lateral and posterior regions clear, with exception of upper portion of scapular region which is dull, and here bronchial respiration is heard; elsewhere posteriorly breathing is vesicular. Repeat large blister in front; to be followed by succession of warm poultices. Quinine and Dover's powder to be continued. Mercurial ointment, as before; beef-tea; brandy; arrow-root.

Sept. 30.—Pulse full, regular, 158; respiration 42; tongue moist and cleaning at the edge; was tortured with horrible dreams in the course of the night, which he requested to be relieved from; diarrhea of a dysenteric character; slight mercurial fetor. Dulness rather less extensive in front (from clavicle to one inch and a half above nipple); no respiratory sound of any kind in dull region; clearness behind and laterally.

October 1.—Died at 4, a.m., to-day.

This was an example of typhoid pneumonia engaging the superior lobe of the right lung, in a person who was the subject of alcoholic poisoning; and, as is usual in such cases, it ran a rapid and fatal course. At a time when there was evidence of improvement fatal syncope occurred. It has been introduced into this category mainly for the purpose of showing, in contrast with the case of Dempsey (No. I.), that solidification of the upper lobe of the lung, the inferior lobe being in a healthy condition, is not of necessity accompanied with resonance, as the doctrine of Skoda previously adverted to would imply. It also disposes of the hypothetic solution of Dr. Williams, who suspects that the examples of pneumonic resonance given by Graves, Stokes, and Hudson, "were examples of the production of tracheal or amphoric sound, *from consolidation of the upper lobe of the lung*, and not pneumothorax."

In the case just narrated the condition supposed by Dr. Williams to give rise to this phenomenon existed, and yet it was not developed.

As to the treatment pursued in these cases, it might be described as being of a mixed character, but rather stimulating and restorative than depletory.

In the second case given bleeding from the arm was practised, the only instance in which I have done it since I became an hospital physician, to relieve embarrassed respiration and prevent the patient from being suffocated, rather than with a curative object. The pulse was at the time full and strong, and blood was drawn only to the amount of seven ounces, with much relief to the breathing. At the same time and subsequently wine was given freely.

Neither this case nor that last given can be adduced as affording testimony in favour of the stimulant plan of treatment, as both cases were fatal. Yet a consideration of their gravity, including their antecedent history, will probably warrant the assumption that under no system of treatment would recovery have taken place in these cases.

In the *Journal of Practical Medicine and Surgery* for April, 1865, is given the substance of a paper by M. Béhier, extracted from the *Bulletin de Thérapeutique*, in which the author states that he has treated thirty-four cases of pneumonia with alcohol, with a result of twenty-seven recoveries. His method is to give from three to ten ounces of brandy in the course of the day, diluted with an equal quantity of water, in tablespoonful doses.

In my first case the evidence afforded in favour of alcoholic treatment was of the most striking and decided character, as will be seen by reference to the report. It was no less so in the case of a woman named Farrell, of which I have preserved only the following particulars:—

Eliza Farrell, 6, Greek-street, aged forty, admitted May 17. Had cough throughout last Winter, which she attributed to a cold and damp room. On the 13th of May had a rigor, accompanied by a sensation of general uneasiness, rather than pain, in front and back of chest. For these symptoms had got some medicine at one of the dispensaries, but having experienced no relief sought admittance into hospital.

When admitted patient was in a state of great prostration and respiratory distress; pulse 120 and weak; tongue dry and crispy; face pale, and surface cold; frequent hacking cough, with brown and viscid sputa.

Signs.—Well-pronounced dulness in right sub-clavicular and scapular regions, where likewise was heard bronchial respiration with a few crepitant râles. Other portions of right side of chest and entire of left side resonant, and respiration exaggerated, but in other respects normal.

℞.—Sulph. quinæ, gr. xxxii.; ether sulph., ʒ i.; acid sulph. dil. ʒss.; aquæ. ad ℥ viii., st. coch., mag. 3tia. Quaque hora. Strong beef-tea *ad libitum*, and four ounces of whiskey daily.

Inflammation progressed downwards, and ultimately engaged the entire lung; but under the above treatment, which was persisted in, patient made a perfect recovery, and was discharged June 4, *i.e.*, eighteen days from the date of admission.

This was a good example of typhoid pneumonia, and as no other treatment save that by stimulants, nutrients, and quinine was resorted to, it illustrates the favourable results of the restorative plan of treatment advocated by Professor Hughes Bennett.

The conclusions deducible from these cases, as regards the phenomenon of muffled tympanitic resonance, are both negative and positive.

Negative.

1st. The phenomenon is not due to transmitted resonance from a healthy through a solidified portion of lung substance.

a. Because in Case No. II., in which it was best pronounced, the *entire* lung was solid.

b. Because in Case No. III. it did not exist, although the inferior and posterior portion of the lung was physically healthy.

2nd. It was not the result of gastric resonance transmitted through a solid lung.

a. Because it existed in Case No. I., in which only the superior portion of the left lung was hepatized, the inferior lobe being in a healthy condition.

b. Because in Case No. II. it existed only in the superior portion of the right lung, notwithstanding that the entire organ was solid; and it likewise existed in the *isolated* lung, as proved by *post mortem* test.

3rd. It was not due to pneumothorax.

a. Because in Case No. II. it existed up to death, and after death lung was found universally adherent to chest, and no air existed in the pleura.

Positive.

1st. The phenomenon was intrinsic in the lung, and had its seat in that portion of the organ in which it was manifested.

a. Because percussion of the lung removed from the body afforded proof of its existence in the isolated organ, and even in a thin layer of it resting on a solid body.

b. Because percussion showed dulness in that portion of the lung, after removal from the body, over which dulness existed during the patient's illness.

2nd. The resonance of the solidified lung was associated with the presence of air in its tissue.

a. Because air freely escaped from an opening made with the finger, under water, in that portion of the lung which yielded tympanitic resonance.

3rd. Simple pneumothorax, whether pneumonic or pleuritic, is characterized by *absence of respiratory sound*, coextensive with tympanitic resonance, and by displacement of the heart if the aëriform effusion be abundant, as in the cases of Graves and Little.

4th. The resonant or tympanitic dulness of pneumonia, due to air implicated in the tissue of the lung, is distinguished from pneumothorax by the qualified or muffled character of the resonance, and by the presence of bronchial respiration and of crepitus, as in Dr. Hudson's cases and in mine.

Art. IV.—*Contributions to Practical Surgery. On the Treatment of Granular Ophthalmia by Pressure.* By William Stokes, Jun., M.D., Ch. M. Univ., Dub.; L.R.C.S.I.; Surgeon to the Meath Hospital and County of Dublin Infirmary; Lecturer on Surgery, Carmichael School of Medicine; Fellow of the Royal Medico-Chirurgical Society of London; Corresponding Member of the Hufeland Medico-Chirurgical Society of Berlin, &c.

I have little doubt that, in this country at least, one of the most frequent causes of incurable blindness among the poorer classes, is that form of granular inflammation of the conjunctiva described by oculists under the various names of "granular lids," "conjunctivitis granulosa," "trachoma," &c. One cannot but be convinced of this on visiting some of the remote districts of this island; and it is truly melancholy to see what vast numbers of otherwise healthy

men and women, are to be found in the union workhouses, and the various blind asylums of the country, deprived of all means of self-support, in consequence of this distressing affection, or of some of its numerous sequelæ. Whether it is that the humbler classes of this country are not so well housed, clothed, or fed, as those of our wealthier neighbours at the other side of the Channel, or that there are some atmospheric or geological peculiarities which tend to induce the disease, it is impossible to say. But as far as my experience goes, the disease, as observed in Ireland, is of a more formidable type, and is more intractable to treatment, than in England, and many of the other European countries, excepting perhaps Bohemia. The surgeon engaged in practice in Ireland, especially, should give a careful consideration to any suggestion based on a sound surgical principle, for the improved treatment of this grave disease; and the method I wish to advocate is, I think, founded upon such. Let me not be understood, however, to advocate this treatment to the exclusion of other methods which surgeons have adopted for the cure of this disease. But I hope to be able to show that pressure—which has nothing in it antagonistic to other therapeutic measures which may be simultaneously adopted—applied in the manner I shall describe, should be allotted a high rank among the therapeutic agents which are made use of in the treatment of granular ophthalmia.

In this communication I shall not enter into the question as to whether this affection depends on any constitutional dyscrasia, or is merely the product of some local irritation. The anatomical nature of conjunctival granulations, which are not new formations or growths, but merely an abnormal or pathological condition of previously existing elements, and the facility with which, under certain injurious influences, the disease can be induced, point much rather to its being a local affection, than, as is generally held, a mere expression of a strumous diathesis. Professor Stellwag is also of this opinion, and observes that the injurious influences which induce trachoma are the same which induce catarrh, blenorrhea, pyorrhea, herpes, &c.; and that among them impure air, dust, smoke, acrid vapours, exhalations, &c., are the most prominent. "Why these influences," the Professor observes, "in one case produce one form, and in another case another form of conjunctival inflammation, is not explained. With regard to trachoma, we cannot be mistaken in assuming that the more frequent or uninterrupted influence of such pernicious agents, and the long-continued

maintenance of a certain condition of irritation in the conjunctiva, constitute a predisposing condition. It is natural, then, that large barracks, poorhouses, houses of refuge, educational institutions, lodging houses, large sleeping rooms for workmen—places, in fact, in which a large number of men live together, and where the cleanliness and ventilation is defective, serve as niduses for trachoma; while individuals who are subject to such influences only occasionally, after long intervals and for a relatively short period, suffer less frequently, and become affected instead with a catarrh or a blenorrhea."[a] Such are the views of Professor Stellwag with regard to the etiological conditions which produce this affection. I shall, however, refrain from discussing at greater length this part of the subject, but proceed to consider what I believe to be the most rational method of treating this formidable affection.

Every practical surgeon must at once acknowledge the very great importance of pressure in surgical therapeutics. The beneficial effects of it in the treatment of urethral stricture, in many forms of chronic articular disease with thickening of the synovial membrane, also in the treatment of exuberant granulations on unhealthy ulcerated surfaces, are familiar to everyone of even limited hospital experience.[b]

The physician, too, has occasional opportunities of observing the beneficial effects of pressure in arresting morbid local action. I allude here particularly to the interesting fact, as observed by my father, of the arrest of the constitutional symptoms of pulmonary consumption in certain cases of pleural fistulæ, and consequent empyema and pneumothorax. This circumstance has been observed

[a] Lehrbuch der practischen Augenheilkunde. Von Dr. Karl Stellwag, von Carion, s. 391.

[b] The treatment of anthrax by pressure, first suggested and practised by Mr. O'Ferrall, of St. Vincent's Hospital, in this city, has engaged the attention of many distinguished surgeons, and amongst them are still found many warm advocates for it. From inquiries into the pathology of this affection, I am inclined to the opinion that the old system of crucial incisions, provided they are sufficiently deep and complete, appears to be the most rational mode of treatment. The distinguished French surgeon, M. Nélaton, who had abandoned the treatment by incisions, now recommends it as being the only one likely to be of real benefit. It is, however, by no means necessary that all cases of anthrax should be so treated, the free use of the bistoury being only advocated by M. Nélaton in the cases where the anthrax has an indurated base. Mr. Hugh Carmichael has advocated the use of pressure in certain cases of venereal phagedenic ulceration (Dublin Journal of Medical Science, September, 1838). Not having, however, had an opportunity of witnessing the effects of this practice, I am not in a position to verify or disprove Mr. Carmichael's statements with regard to the efficacy of this procedure.

in several cases in the Meath Hospital, and seems to be attributable to the pressure exercised on the diseased and collapsed lung. Certain it is that as in several cases observed in Dublin, the patient, after having recovered from the shock produced by the accident, and the consequent effusions of air and liquid into the pleura, may experience a gradual improvement in general health, and ultimately so far recover that all constitutional symptoms of phthisis disappear for a length of time.[a]

Cases, too, have been observed of the disappearance of splenic tumours under continual pressure. The late Mr. Kirby, of this city, used to detail a remarkable example of this. Atrophy of the lung, to the last degree, has been noticed by Andral, in his *Clinique Médicale*, as a result of pressure by a mediastinal tumour; and the termination of cases of aortic aneurism and intra-thoracic cancer, by sphacelus of the lung, is an example of the effects of pressure in modifying normal organizing processes.

There seems some reason to believe also that, even in essential diseases, the production of the secondary organic effects—as, for example, the development of pustules in small-pox, may be prevented by early modification of the local vascular action by pressure. The following case, already noticed by Dr. Stokes in his paper on the prevention of pitting in small-pox, is of such extreme clinical interest that I shall make no apology for quoting it:—

"A man, who had been under treatment in the surgical wards of the Meath Hospital for a chronic disease of the knee-joint, became affected with fever, followed by the appearance of variola of a severe type. He was transferred to the medical wards, and went through the stages of the disease in its confluent form. His knee had been strapped with mercurial plaster; and at the period of retrocession, and the falling of the scabs, the dressings came off. We then observed this singular appearance:—Above and below the knee, and ending and commencing at a line exactly corresponding to that of the strapping, the integuments were covered with blackened scabs, while the knee remained completely free of any sign of eruption, and silvery white, contrasting strangely with the condition of the parts above and below it."

There can be little doubt that in this case the arrest of the

[a] See article "Pneumothorax," in the Cyclopædia of Practical Medicine, by the late Dr. James Houghton. Similar circumstances are detailed by Dr. Stokes, in his work on Diseases of the Lungs and Windpipe.

pustular development was due to the diminution or modification of the vascular action in the part by pressure, and I think it also probable that the treatment for the prevention of pitting of the face in confluent small-pox, which is adopted with such signal success in the Meath Hospital by the application of poultices, is, to a certain extent, due to the same cause. These observations tend strongly to show that the development of pustules may be, at all events, considerably arrested by diminishing vascular action. Does the converse of this hold good? Undoubtedly. The development of pustules is observed to be especially confluent in those places in which, previous to the pustular formation, a determination of blood has been induced. For example—in situations to which mustard poultices may have been applied to relieve pain previous to the development of the eruption.

The beneficial effects of pressure are, however, much more frequently observed in many forms of the so-called surgical diseases. "By diminishing," as Professor Stellwag observes, "the calibre of the vessels, and consequently hyperemia and exaggerated production of elements," it acts as a direct antiphlogistic; and it is, therefore, of paramount importance in dealing with many forms of ophthalmic disease, and in the after-treatment of ophthalmic operative procedures. Bearing these facts in mind, and those of the case I have just adduced, may we not reasonably *suggest the great probability of the pressure bandage serving as a powerful prophylactic in the ophthalmic complications of variola?*

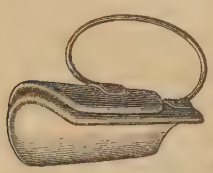
Von Græfe has recently discussed the subject of pressure bandages in ophthalmic therapeutics (*Archiv. f. Ophthal.* IX., 2 p. 111–152. 1864). He commences by dealing with the subject historically, and mentions that even in the early records of ophthalmic surgery we find the pressure bandage made use of in cases of exophthalmos, staphylomata, diseases of the lachrymal sac, injuries of the bulbus oculi, &c. Among modern ophthalmists Sichel and Arlt[a] have the merit of directing particular attention to the importance of pressure bandages, especially in connexion with the after-treatment of extractions. In addition to the cases of flap extraction, in which the pressure bandage is so valuable, Von Græfe discusses the value of it in cases of linear extraction, intra-ocular hemorrhages, partial escape of the vitreous body after removal of staphylomata; injuries such as perforation of the sclerotic, with partial prolapse of the choroid; also to promote healing in the after-treatment of opera-

[a] Jahrbuch der Gesammten Medicin, B. 128, P. 238.

tions engaging the conjunctiva or lids—in cases of purulent infiltration of the cornea, corneal ulcerations, with prolapse of the iris, and in pustular or ulcerative destruction of the cornea.

Although, as far as I can determine, no mention of the treatment of granular ophthalmia by pressure, in any form, has as yet appeared in the literature of ophthalmic surgery, it has, nevertheless, been applied. In some of the Egyptian hospitals, as I have recently learned from a trustworthy authority, a favourite treatment for granular lids, which so frequently occurs as a sequela of the so-called Egyptian ophthalmia, is to strap down the eyelids by layers of adhesive plaster. This must produce a certain amount of pressure, which, most probably, accounts for the treatment proving so beneficial. I have also learned from Dr. Wordsworth, of the Moorfields Ophthalmic Hospital, London, during a visit which he paid to Dublin, last Autumn, that he has treated some cases of granular ophthalmia solely by the application of compress bandages, and with satisfactory results.

It was during a conversation with my friend, Dr. Robert M'Donnell, on the subject of granular ophthalmia, that it occurred to me that pressure would, most probably, best succeed if applied to the granular surface of the conjunctiva palpebrarum, without, at the same time, causing any undue pressure on the bulbus oculi. Dr. M'Donnell had already, in some cases of granular ophthalmia, inserted between the affected lids and ball of the eye masks made of glass and of the form of the ordinary artificial eyes, for the twofold purpose of preserving, if possible, the cornea from the mechanical irritation produced by the granulations, and also to subject these to a certain amount of pressure. Owing, however, to the difference in the convexities of the mask and the bulbus oculi the amount of pressure on the latter produced at the edges of the mask prevented the patient from bearing the instrument beyond a short space of time. The problem to solve, therefore, was to devise some means by which a continued pressure could be applied to the granular surface of the conjunctiva, without, at the same time, distressing the patient by any undue pressure on the bulbus oculi. After a number of experiments, the instrument which I devised, as represented here, appeared to me, at first, to possess all the necessary requirements. The principle of the instrument will be at once understood by a glance at the accompanying woodcut.



It consists of two highly polished ivory plates made somewhat thicker at the upper part corresponding to the reflected portion of the conjunctiva, at which situation the granulations are generally most abundant and of largest size; at the lower extremity of the inner plate a very delicate spring, made of gold wire, was attached, terminating in a broad button, which made slight pressure on the anterior or convex surface of the ivory plate. The outer or anterior ivory plate is removable, there being no attachment to the broad button at the end of the gold spring. This instrument I found easy of application and capable of being borne by the patient without any difficulty. The inner plate being first introduced under the eyelid, and the anterior plate then being placed on the outer surface of the eyelid, was held in its place by the spring.

One disadvantage of this instrument was soon obvious, namely—the want of power to regulate the amount or degree of pressure to be applied. To be able to regulate this is of great importance in treating the disease in different stages of its development. To rectify this deficiency Mr. W. Pearsall, a pupil of the Meath Hospital, and a skilful mechanician, devised and constructed a simple but ingenious modification of the first compressor I have described, and by which the pressure can be increased or diminished according as the surgeon thinks fit.

We may now proceed to consider briefly some cases of granular ophthalmia which have been treated by pressure in the Meath Hospital. The first of these was that of S. C., aged nineteen, who was admitted into the Meath Hospital on the 25th of last August. She had suffered from an acute conjunctival inflammation, three months previously; and, at the time of her admission into hospital, the conjunctival surface of both upper eyelids presented numerous and well marked examples of what are recognized by ophthalmists as pure papillary granulations. There was considerable impairment of vision in consequence of corneal opacity, depending partly on secondary keratitis, and partly on the well marked development of the superficial form of pannus, or pannus of the first degree, as desrcibed by von Græfe in his clinical lectures. In addition to these, there were several small ulcerations situated, for the most part, on the upper portions of the cornea.

I looked upon this case as one particularly well adapted for pressure, and the result showed that my anticipations were well founded.

I commenced by applying the lid-compressor for one hour daily; and at the end of ten days, finding that the patient bore the instrument without any annoyance, and that there was a marked improvement not only in the affected portion of the conjunctiva, but also in the cornea, the pannus having to a great extent disappeared, I increased the time of application to two hours daily. This I continued up to the end of the fourth week. At this time the cornea and affected portions of conjunctiva began to assume quite a normal appearance, and an obvious improvement in the patient's power of opening the lids was observed.

The patient now could bear the instrument for four hours daily; and at the end of the seventh week I looked upon the case as one which had been brought to a successful termination. I did not, however, dismiss the patient from the hospital, as I wished to satisfy myself, if possible, that this signal improvement would remain permanent. At the end of three months the patient returned home.

The next case to which I shall allude is that of J. B., a young woman aged twenty-four, who was admitted into the Meath Hospital on the 20th of last September. She had been under treatment in the country for some time previously, and the surgeon under whose care she had been, had repeatedly scarified the granulations, and followed up this treatment by the free application of caustics. This case, which at the time of the patient's admission into hospital presented, at and about the upper portion of the reflected conjunctiva, a large cluster of well-formed granulations, I treated by combining pressure with applications of a weak solution of nitrate of silver. At the end of three weeks the patient, at her own request, left the hospital. The improvement certainly was very great, and showed, even in a more marked manner than in the former case, how easily the instrument is borne.

The third and last case to which I shall now allude, is that of C. H., aged eighteen, who was admitted into the Meath Hospital on the 12th of last October. This case presented an example of the highest degree of development to which pure granular trachoma may come. The palpebral conjunctivæ of both lids were thickly studded with the vesicular or "sago grain bodies," which, in consequence of their form and semi-transparency, the German oculists have not inaptly compared to frog-spawn. The swelling of the conjunctiva, at its reflected portion, was especially remarkable. The cornea presented all the characteristics of an aggravated form of secondary ulcerative keratitis pannosa. At

the time at which this report is being made (Dec. 9) the patient exhibits in every respect a most marked improvement both as regards the conjunctiva and cornea; and no treatment has been resorted to in this case except the application of the lid-compressors from two to four hours daily. These cases, few though they be, are sufficient to show that the treatment by pressure, applied in the manner I have described, can be adopted without discomfort to the patient, and without causing any irritation to a cornea, which is the seat of ulceration and pannus. The general improvement, in both conjunctiva and cornea, appears to proceed with more rapidity than it does under the ordinary method of treatment.

One great advantage which I claim for this treatment over the ordinary methods of scarification, and subsequent application of various caustics, is, that there is nothing in pressure which can tend directly or indirectly to the production of that most unfortunate, but too frequent result, not so much of trachoma as of its usual treatment, namely, entropium, with trichiasis. I have little doubt that this condition is more frequently the result of the use of caustics and the scarifying knife than the affection for which these are so frequently, and in many instances so injudiciously, made use of. Certain it is, that nothing can tend more to the development of cicatrices in the conjunctiva, and consequent contraction of that membrane and inversion of the lid, than the injudicious use of those ordinary methods of treatment to which we have before alluded.

The treatment by pressure is also quite free from all danger of the occurrence of diphtheritic and other destructive forms of inflammation of the conjunctiva, which not unfrequently supervene after the treatment by inoculation.

With these brief observations on the treatment of granular ophthalmia I shall for the present content myself, and trust, at no distant period, to be able to lay before my professional brethren, the results of a larger experience in the treatment of granular lids by pressure.

Art. V.—*Cases of Injuries of the Larger Joints, with Remarks.* By W. Colles, one of the Surgeons to Steevens' Hospital.

Case I.—A boy, aged about thirteen, came in contact with a reaping machine, while in motion, and received the following injuries in and about the ankle joint:—There were three transverse incised wounds, with intermediate oblique incisions partially connecting them. The first of these, about an inch in length, was situated on the dorsum of the foot; the second was somewhat larger, and higher up; and the third about the level of the ankle joint, and exactly representing what would be the anterior incision in Syme's operation—it extended from one malleolus to the other, dividing integuments, tendons, arteries, and bones, and opening the ankle joint, into which the fingers could be passed in all directions. The extremity of the fibula was deeply incised; two detached portions of bone from the lower end of the tibia were lying along with the lower flap; these were removed. On admission into Steevens' Hospital there was little or no hemorrhage; the shock was not as great as might have been expected. Notwithstanding that the foot was flexed to the utmost, I was unable to close this wound; I therefore drew the lips together as well as possible by means of sticking plaster, without using sutures, and maintained the flexed position by means of an iron splint, which was made in one piece, extending from behind the calf to the sole of the foot; this, along with long straps of plaster from the toes to the upper part of the leg, kept the part perfectly at rest. In three days' time suppuration had commenced; but I did not allow the dressings to be removed, for nearly a fortnight, contenting myself with merely correcting the fetor by chlorinated washes, &c.

When the plaster was removed I was gratified to find a broad belt of granulations occupying the site of the extensive wound. The patient was kept at rest for a month, when he was allowed to get out of bed, but not to put the foot on the ground; in another month he returned home with a useful foot.

In this case the prognosis at first was not very favourable, nor was the prospect of a rapid cure very encouraging; indeed, if we had followed the principles which are laid down for our guidance, we should have at once proceeded to consider the propriety of having recourse to either resection of the joint or amputation. I attribute much of the successful issue to the youth and good

constitution of the patient, and to the fact that I did not allow the limb to be disturbed, nor even the dressings to be removed, for a considerable period, although the discharge was profuse and the odour disagreeable. I thereby guarded against the probability of inflammation coming on from disturbing the position of the limb, and also against the admission of the atmospheric air.

Case II.—Mr. S., aged about thirty, a dissipated man, was admitted into Steevens' Hospital, in a state of extreme intoxication, having met with an accident for which he could not account. We found a fracture of both bones of the left leg, close to the ankle: there was a small punctured wound on the outer aspect, which was bleeding freely, so much so that it was the occasion of my being sent for. Although only an hour after the accident, there was distinct emphysema of the leg as far as the knee. In a few days a black spot was observed on the outer malleolus; a slough, about the size of a crown piece, separated, exposing the joint and a portion of the fibula bare and very movable. After a few days healthy granulations sprung up, the piece of bone becoming firmer and more attached.

The case was progressing favourably, the wound being nearly healed, when a phagedenic form of ulceration seized it; it carried everything before it; nor did it cease until it had come within four inches of the knee joint. Various caustics and stimulating applications were tried—even change of air had no effect in arresting its progress; finally, I covered the whole surface with brown sugar, when the ulceration ceased. As soon as the ulceration made no further progress I amputated below the knee. The wound was healing well, when a large abscess formed on the outer side of the knee, another on the inner side; the discharge was so profuse that at one time we were considering the expediency of amputating above the knee; however, after a time the discharge began to decrease. Abscesses continued to form along the thigh, causing much debility. Finally, all healed up, and he left hospital, after twelve months' treatment, with a stiff knee.

On superficial observation we have here only an ordinary case of compound fracture of the bones of the leg, yet there were circumstances which rendered the case peculiar. The hemorrhage was excessive, yet we could not go search for the bleeding vessel; it was to be feared that pressure would have had the effect of driving the blood into the deeper tissues of the limb. The wound was very

small, and must have communicated with the joint; the presence of emphysema, occurring as it did immediately after the receipt of an injury, indicated some serious mischief. The patient's health was none of the best, owing to his drunken habits, yet we had very little constitutional disturbance when the slough separated and the joint opened; this latter consideration alone was sufficient to preclude the question of amputation.

When the integuments sloughed to such an extent there was no other treatment remaining but to amputate as soon as the phagedenic action had ceased. The application of brown sugar stopped it completely. I had been reading, a few days previously, of its having been used by American surgeons during the late war, when no other dressing could be obtained; they reported so favourably that I made trial of it in this case.

Case III.—A man, thin, but healthy, aged about thirty-two, was caught in an engine by the right knee. There was a lacerated wound on the inner side of the patella, with considerable swelling about the joint, and, as far as could be ascertained, a fracture of the patella; some serous fluid could be pressed out of the wound; there was considerable ecchymosis of the thigh.

After some days a dark patch was observed on the outer side of the patella; here a slough formed, one inch and a half long by half an inch in breadth; this was raised considerably, and gave the evident sensation of fluid underneath. I divided the slough, and gave exit to a considerable quantity of sero-purulent fluid; as an abscess had formed in the thigh, I opened it also, and let out some healthy pus. There was considerable pain and starting of the limb, especially at night.

In about three weeks the discharge had diminished considerably; but, as the wound did not close, I introduced a probe, and felt a portion of bone bare and loose; on its removal it was ascertained to be a portion of the under surface of the patella partly covered with cartilage. The knee had become stiff and rigid, but I thought I could feel some motion in the joint; I put it across my knee and gave it a forcible wrench, when I felt and heard a tearing and laceration of the tissues in the joint. Of course this gave him great pain, but was not followed by any inflammation. He would not allow anything more to be done to the leg, so he left the hospital a few days after.

Taking everything in the case into consideration, we must admit

that in this case the joint was opened, yet the constitutional disturbance was not great at any time.

Case IV.—A boy, while swimming, struck his knee against some hard body. He was brought to Steevens' Hospital with an incised wound a little above the outer angle of the patella, extending outwards for about two inches; it was treated in the usual way. All went on well for about a fortnight, when, in the centre of the granulations filling up the wound, a yellow spot appeared resembling a hernia of the synovial membrane; it increased in size, and became elevated; it ultimately broke, and gave exit to a quantity of serous fluid resembling synovia. Acute inflammation of the joint followed, as characterized by swelling, redness, and pain. I at once put him under the influence of mercury. An abscess formed of considerable size on the inner side of the joint, and extending down over the tibia; I did not interfere with it locally, but allowed it to burst; it emptied itself and closed. Other abscesses formed behind, and again in front of the femur; eventually the pain subsided. The joint is now stiff; the periosteum all round is thickened; the patient is gaining strength and appetite; he is most anxious to get up.

In this case the wound at first did not apparently reach the joint, yet it implicated it subsequently, without any evident cause, and by a process not easily explained. We had all the symptoms of acute inflammation of the joint, terminating in the formation of a large abscess; yet matters did not go to that extent that we find in similar cases. I attribute this very much to the rest, and beneficial effects of the mercury, which, whatever theoretical detractors may say, has a great influence in counteracting inflammatory action.

We may perceive that the reparatory process may go on in a joint, though it be filled with purulent matter, and that anchylosis may occur without the cartilage being expelled by the profuse suppuration, as we find in *disease* of the same joint. The process by which the joint came to be secondarily opened is curious, and not explicable by any surgical process that I know of. In this case, also, the necessity of an operation was imminent.

Case V.—A boy, aged about fourteen, received a contusion on the inner side of the left knee, from the wheel of a cart. He was admitted to Steevens' Hospital. Gradually a portion of the integuments in the neighbourhood assumed a dark colour, a slough

formed the size of half-a-crown, the line of demarcation showed itself. and sank deeper. He had no bad constitutional symptom up to this time, viz., about a fortnight after the receipt of the injury, when suddenly, at night, he was seized with violent pain in the joint, accompanied by great constitutional disturbance; the knee became greatly swollen and red, the tumefaction extending up the inner side of the thigh, which soon assumed a reddish blush, gradually darkening in colour; on pressure at the knee a watery fluid, mixed with bubbles of air or gas, escaped; the fever continued to increase in intensity, he became delirious, and died in a few days.

On admission, this boy's case seemed deserving of little attention; yet when the separation of the dead from the living parts reached the joint, such local and constitutional disturbance was set up that the question of surgical interference was precluded altogether; in fact, to have given this patient a chance, the limb should have been removed on his admission, an operation which the surgeon would not have thought of proposing or the patient of submitting to.

In these injuries we can seldom expect a speedy and safe issue; we may perceive that there are different periods at which danger may be apprehended, and that they do not depend on the amount of injury. We may have reaction set in and inflammation run high in twenty-four or forty-eight hours after the receipt of the injury; this we may denominate the *primary period* of danger. At the end of the second or third week the separation of a slough, or some other unexpected cause, may give rise to a bad form of inflammation of the joint; we may denominate this as the *secondary period* of danger. These evil consequences may, I think, be attributed to the presence of air in the joint, and although many surgeons deny that this can set up inflammation, and even record cases where its presence has not been followed by any bad symptom, still when we consider that every part of the body is covered with cuticle, and that if we remove that covering, or expose a new surface, inflammation is set up, and a new covering is formed resembling the former cuticle, we may fairly reason that the presence of air in a joint is likely to be followed by inflammation. Even when the viscera are exposed a covering of cuticle is thrown over them, as in the case recorded by John Bell. Having escaped these periods of danger we have the exhausting discharge of pus in quantities, the ulceration and destruction of cartilage, the effusion of lymph, granulations, adhesion and consolidation into bony union, to contend with. During all this time the patient is liable to all

the various diseased actions attending all injuries and surgical operations. This we may denominate the *tertiary period* of danger.

From the cases here recorded we can scarcely draw any deductions on which to form rules for our guidance in practice; on the contrary they show us that the rules in vogue at present are liable to many and great exceptions; they compel us to go back and take up each case as a separate consideration, and to recommend a line of treatment which we think most suitable for that particular case. This includes the important question of operation.

In injuries of the larger joints the surgeon has often little difficulty in deciding on the line of practice to be adopted and the dangers to be dreaded. Many cases thus die of the constitutional effect of the injury a few hours after its receipt; we may have cases in which the surgeon can see at a glance that it is at once necessary to remove the part by resection or amputation. On the other hand, there are many cases which are sources of much anxiety, as to the consideration of which line of practice he should adopt. For the solution of this momentous question he must rely on his experience—both on what he has seen and read with the circumstances in the patient's case. If he determine to save the limb he must look forward to long suffering, great exhaustion, and at best a termination in a stiff joint, during which, at any time, an attack of inflammation may supervene and destroy the patient, without being able to have recourse to any operation; or if we must resort to operation it must be under circumstances much less favourable than at the outset. But if the operation be proposed at the first he may hope for recovery in a few weeks.

Having decided on the necessity of an operation, another question arises, what it will be—resection of the joint, or amputation? The records of civil practice do not offer us many cases from which to judge of the probable success of resection, but we must not forget that it in general is a much more severe tax on the constitution than amputation. In military practice, where the injury is so greatly complicated, though in smaller joints, resection may succeed; yet in the larger joints we find the operations, resection and amputation, all have such a tendency to a fatal termination that it is difficult to form any opinion from the statistics at our disposal.

One thing we learn, that the usual manner of evading the difficulty by proposing to wait, and be guided by symptoms as they arise, is not to be considered always as safe and expedient. If we defer operating, on the receipt of the injury, we may never again have

a chance of affording even such partial relief; the attack may be so sudden and severe as to preclude the possibility of an operation as occurred in the last case.

Here I may allude to the weakness of some surgeons who, in cases similar to these, say they will explain everything to the patient, and let him decide as to the expediency of an operation. This is an abandonment of the duties imposed on him, and an unworthy effort to ease his conscience by throwing the responsibility on the shoulders of a patient who is perfectly unacquainted with surgery, and at the time incapable of forming a correct judgment. The surgeon cannot always say decidedly whether or not the operation is absolutely necessary to save the life of the patient; for surgery is not perfect, nor surgeons infallible. He should, however, say, to the best of his judgment, whether or not the operation affords the best chance of recovery. Should he urge this with all the power he is capable of, he has done his duty; if the patient refuse, the surgeon must only adopt that other plan of treatment which to him appears next best; this he may pursue with an easy conscience.

Art. VI.—*On Scarlatina Complicating Child-bed.*[a] By Alfred H. M'Clintock, M.D., F.R.C.S., President of the Dublin Obstetrical Society; Honorary Fellow of the Obstetrical Society of London; Late Master of the Lying-in Hospital, Dublin; &c., &c., &c.

In the present paper I propose submitting a clinical analysis of some cases of scarlatina, occurring within the first eight days of childbed.

Common observation has attached a great deal of importance to the disease under these peculiar circumstances, and by physicians generally such a complication of the puerperal state is regarded with profound dread. Nevertheless, but little has been done towards investigating scarlatina under this aspect. Beyond a few isolated cases recorded here and there in our periodic medical literature, I believe we may in vain search for information upon the subject.

[a] This paper was read at a meeting of the Medical Association (K.Q.C.P.), in February, 1859. It is now published, with little alteration, beyond the addition of some cases.

Although not just prepared to say that scarlatina, as met with in the recently-confined woman, assumes a character or runs a course necessarily different from what it does at other times, still, when when we look at the condition in which the whole economy is left by the act of parturition—the exalted sensorial and nervous sensibility—the disturbed circulation—the facility for contamination of the blood—the proclivity to abdominal inflammation—the augmented activity of the absorbent and secreting functions—and the exhaustion of the patient; when, I say, all these facts are taken into consideration, there will appear good reason for supposing that the disease must undergo at the puerperal period some considerable modification in its symptoms and course.

Let me, in the first place, speak of the mortality resulting from the disease, when invading puerperal patients; and, be it remembered, it is to such cases exclusively that my remarks upon scarlatina throughout this paper have reference. Of all the cases I find recorded (their number is very limited), as well as of those furnished to me by medical friends, the fatalities were two out of three, or over sixty-six per cent. From this return the disease would appear a truly formidable one—in fact, not much less to be dreaded than puerperal fever itself. I am happy to be able to say that this fearful mortality does not always attend upon it. Of thirty-four cases of scarlatina occurring among the patients of the Lying-in Hospital, from November, 1854, to November, 1861, only ten died: that is, in other words, a death-rate of thirty per cent. There is, undoubtedly, a wide difference between these proportions; but if we take their mean, namely, forty-eight per cent., we shall probably have the nearest approximation to the average mortality from the complaint when affecting puerperal women. Even so, however, it appears a formidable disorder, and is justly to be viewed as one of the most dangerous complications of childbed; scarcely less so than epidemic puerperal fever, from which it seems to differ in this particular, that whereas the latter is more fatal in hospital practice, scarlatina, on the other hand, is, if anything, more fatal in private practice.

There is one circumstance which, beyond all question, exercises a very decided influence upon the fatality of the complaint, and that is the period of child-bed at which its invasion is made. As a general rule, *the earlier its invasion the greater is the danger to be apprehended.* Of the ten fatalities among the cases which constitute the basis of this memoir eight were patients in whom the disease

appeared within thirty-six hours after delivery. In the two other cases it seized the women on the third day. Altogether, there were *eighteen* patients attacked on the first or second day; and, as we have just seen, *eight* died; that is, in the proportion of about forty-five per cent.; whereas all those in whom the disease appeared on or after the third day—*sixteen* in number—recovered, with only two exceptions. These statistics would go far to establish the point in question; but they are strikingly confirmed by the observations of Dr. Halahan, reported to the Obstetrical Society. Of Dr. H.'s cases, *three*, who were ill from the moment of delivery, died. Of *five*, who were attacked during the first twenty-four hours after delivery, but *one* recovered. Of *ten*, who were attacked on the second day, but *one* recovered. Of *four*, seized with the disease on the third day, but *one* recovered; the remaining *three* were attacked with the disease on or after the fifth day, and in each instance recovered.

A similar observation has been made in respect to puerperal fever, and was very well exemplified at the Lying-in Hospital during the fatal epidemic of this disease, which prevailed to such an extent in this, as in many other cities, during the Winter of 1854–55. "Thus, of *nine* patients in whom the complaint manifested itself on the first day of childbed, *eight* died (*i.e.*, ·88); *twelve* were affected on the second day, *six* of whom died (*i.e.*, ·50); *ten* were attacked the third day, and of this number the disease proved fatal to *three*, being in the proportion of thirty per cent."[a]

With respect to the causes of death among the fatal cases of scarlatina, I find that *six* patients sank apparently under the direct influence of the disease; *two* died of metro-phlebitis; and two of peritonitis coming on at an unusually late period of childbed. These two deaths took place, the one on the twelfth and the other on the thirteenth day of childbed. In both of them the peritonitic symptoms declared themselves contemporaneously with the first appearance of desquamation, and proceeded with such rapidity as, in the debilitated state of the system, to bring about a fatal issue within thirty-six hours. Of the eight other patients, the days of dissolution were, *three* on the fifth, *two* on the sixth, *one* on the eighth, ninth, and eleventh days respectively, counting from the day of delivery.

I cannot say there was anything peculiar as to the mode in which

[a] See "An account of the Recent Epidemic of Puerperal Fever, as it appeared in the Dublin Lying-in Hospital," by the author, in the number of this Journal for May, 1855.

the disease made its invasion. The initiatory symptoms were rapidity of pulse, hot skin, headache, and the strawberry tongue, with redness of the fauces. With reference to the *pulse*, I would just wish to make an observation. In perfectly normal convalescence from parturition, it is, I consider, an exceptional occurrence for the pulse permanently to beat over eighty strokes in the minute; nay, I have seen not a few cases where its rate was sixty, fifty-six, forty-eight, and even so low as forty-two in the minute, without any assignable cause for it. Hence, a permanent acceleration of the pulse to ninety-six or upwards should always awaken the vigilance of the attendant, and lead to a full and careful investigation of the patient's condition. By strict attention to this point I have, in some cases, been led to suspect the presence of the disease at a very early period, and when its other symptoms were very imperfectly developed.

The eruption was on several occasions very slow in showing itself. Thus, in one case, it did not appear for ninety-six hours, and in other cases not until fifty-six, forty-eight, and forty-four hours, without this delay seeming to have any unfavourable influence on the course of the disorder, as all these women recovered. In one instance, however, where an interval of forty-seven hours elapsed before the rash came out, the woman died, but not until the thirteenth day, and then of peritonitis. No abatement of the fever took place in any case consequent upon the appearance of the eruption. This last did not present anything peculiar in its character. It was generally most intense, and of the deepest hue, in the bad cases. In one instance the rash made it appearance in the course of the labour. It was this patient's first pregnancy, and her age was thirty-one. The first stage of labour was rather prolonged in consequence of a rigid condition of the os uteri. It was remarked at this period that her face was more flushed, and the pulse more accelerated than could well be accounted for by the circumstances of her labour. In order to promote the dilatation of the soft parts, I ordered her a warm hip bath,[a] which had a twofold good effect;

[a] Let me here say a word respecting the use of the warm *hip* bath in the treatment of rigidity of the os uteri. Ten years ago I brought this remedy into use at the Lying-in Hospital, and, from a very large experience of its use there, as well as in private practice, I can, with the utmost confidence, recommend it on the grounds of convenience, safety, and efficacy in the class of cases specified. It is entirely free from the objections which apply to the *general* warm bath, under the like circumstances, whilst, I believe, it possesses all the advantages to be derived from the use of the latter. I have never seen hemorrhage induced by it ; but, of course it should not be employed if

for when I next saw her (in the course of two or three hours) I found that the head had cleared the os uteri, and that the scarlatinal eruption was well out on her face, neck, and chest. Her pulse was now 120. The head of the child being sufficiently low in the pelvis to admit of the easy application of the forceps, I deemed it prudent to employ it in order to terminate the labour. This course was adopted solely in consequence of the appearance of the scarlatina, and not from the presence of any urgent symptom connected with the process of parturition. The next day the rash was well out, and of a deep red colour: pulse one hundred and twenty: some swelling and considerable redness of fauces: tongue dry and brown. The symptoms assumed more and more of a typhoid character; and she died on the sixth day, the eruption still occupying the skin, with undiminished intensity. No ulceration of the throat took place, neither had she at any time vomiting or diarrhea, although there was some tympanitis of the abdomen. From the second day she was generally in a stupid, drowsy state, bordering on, but not actually amounting to, coma. This is the only case that has come under my observation where scarlatina unequivocally declared itself before the completion of labour. The vital powers at once gave way under the disease; and the liberal employment of diffusible stimulants, quinine, and nourishment of every kind, seemed ineffectual to avert or delay the fatal issue.

The affection of the throat was comparatively slight in all the cases; and in but two instances did ulceration, and that of a trivial kind only, take place. The exemption from angina forms, I think, a remarkable feature of scarlatina when occurring among puerperal patients. Such a complete immunity is hardly ever met with, I believe, among non-puerperal patients of adult age.

Where the disease ran a favourable course its presence did not seem to interfere in any way with the healthy discharge of the functions peculiar to childbed. The secretion of the milk and of the lochia, the involution of the uterus, the contraction of the vagina, &c., all went on undisturbed by the existing complication. Nor

any tendency to hemorrhage existed. There is no house in which it cannot be improvised. Patients generally derive great comfort from it, sitting in it for twenty, thirty, or even forty minutes, the temperature (100 Fah.) of the bath being maintained by additions of hot water. I have frequently repeated the bath with manifest advantage. To protect the patient from contact with the cold sides of the bath, above the water's edge, a dry sheet may be thrown over the entire bath, and she is then allowed to sit down. The sheet does not prevent the contact of the water with her person, whilst it does prevent the contact of the cold sides of the bath above the level of the water.

can I say that the access of scarlatina gave any increased tendency to the occurrence of puerperal fever; indeed the opposite opinion would, perhaps, be more consonant with facts. It is of importance to bear in mind that the greater number of these cases occurred at times when puerperal fever was more or less prevalent; and yet of the thirty-four cases only *one* woman died with uterine phlebitis, one with metritis, and two with abdominal inflammation, which latter may with as much reason be pronounced scarlatinal peritonitis as puerperal peritonitis, for it appeared at a much later period after delivery than does puerperal peritonitis; but at that particular stage of scarlatina, namely, on the subsidence of the eruption, in which, according to Copland, inflammation of the abdominal serous membrane is most likely to show itself. "Peritonitis," writes this author, "may appear as a complication of scarlatina, either consecutively of diarrhea and vomiting or independently of these. I have, however, rarely met with it (he continues) during the stages of eruption, but more frequently as a sequela of the malady, and in connexion with obstruction of the kidneys and anasarca." It may, then, fairly be questioned whether these cases were examples of puerperal peritonitis.

Among the patients that recovered were two who showed some symptoms of hysteritis about the time of the coming out of the rash; but these symptoms (uterine tenderness and slight pain) gave way under mild measures after the eruption became fully developed. In three or four cases I remarked some increase in the size and the sensibility of the uterus cotemporaneously with the appearance of the eruption.

No example of dropsical effusion supervening on the attack of scarlatina came under my notice. This observation should, however, be qualified by stating that the patients left the hospital before, or about, the time that this sequela is wont to show itself, so that I cannot say whether they all escaped dropsy, or what proportion of them had it; certainly no example of such came to my knowledge.

In several instances a very distinct re-accession of febrile symptoms appeared at the time of desquamation, commencing about the eighth or tenth day. In one case, which terminated fatally, this circumstance was strikingly exhibited. A delicate-looking woman was confined of her second child after an easy labour. The day following she seemed feverish; pulse 96; her eyes were heavy, and she had some cough; no uterine pain or tenderness, however.

On the third day she complained of headache; pulse was 100; she was thirsty, and the tongue was rather dry. She had small doses of blue pill and James's powder (Newbery's) at short intervals. The next morning these symptoms continued; she looked languid and oppressed, and had slept badly. On the chest and back were numerous small patches of a dull pink-coloured efflorescence, but whether belonging to measles, scarlatina, or typhus could hardly at this period be determined from the character of the eruption alone.

On the fifth and sixth days the rash came out more abundantly, and was of a red colour; on the trunk it was continuous, but on the limbs rather punctated, and rough to the touch; no soreness of throat; fever more decided; tongue dry; pulse 100, and weak. She has been getting diaphoretic mixture, wine, and beef-tea.

During the two following days there was no alteration in her condition; the pulse ranged at about 104. She continued to get wine and beef-tea, &c. The state of the abdomen had been daily examined, and found most satisfactory, being soft and entirely free from pain or tenderness in any part. The secretion of milk has been very scanty, but the lochial discharge has gone on without interruption.

The morning of the ninth day showed a considerable amendment in her symptoms; the pulse had fallen to 88; the tongue cleaning, and the rash fading off; but she complained of languor and prostration: was allowed egg flip made with brandy, beef-tea, small doses of carbonate of ammonia, and an anodyne draught at bed time.

Tenth day.—Her improvement progresses steadily; she is cheerful, and feels stronger; pulse 88; tongue clean and moist; ate an egg at her breakfast. I stopped the carbonate of ammonia as the bowels are a little relaxed, but continued the nourishment. On the afternoon of the succeeding day she had a marked change for the worse, the pulse rising to 110, and the tongue becoming dry and glazed, at the same time that she complained of weakness and despondency. Desquamation has just begun to take place. Bad symptoms appeared in quick succession, and speedily acquired an extreme degree of intensity; rapid pulse, sunk countenance, prostration, total disinclination to food, swelling, pain and tenderness of the belly. I need not particularize the symptoms or the details of treatment; suffice it to state that she died in forty-eight hours from the outburst of these fatal symptoms, and that a *post mortem* examination revealed intense peritonitis, with serous effusion.

Now, in this instance it will be remarked that the sudden and

unexpected reaccession of fever and the occurrence of peritonitis were exactly coincident with the commencement of desquamation. The case was a remarkable one in other points, but those I need not here advert to.

Respecting the *treatment* of scarlatina when affecting puerperal patients my remarks may be few and brief. I shall merely give the inferences which may be drawn from my past experience, without wishing to constitute them into rules of practice, or to extend them in any way. The disease in question is one that presents varying types, and therefore must require corresponding alterations in its treatment. In this, as in puerperal fever and other epidemic diseases, we are too much in the habit, I fear, of prescribing according to some fixed rules, some Procrustean plan of treatment, instead of exercising a free unfettered judgment upon each case, and looking at it *individually* and not *generically*.

Careful observation has strongly impressed upon my mind two precepts in respect to the treatment of scarlatina when attacking puerperal women.

One of these is, extreme reserve in the use of purgatives during the course of the disease, and especially at its commencement. I am well aware that this maxim applies to scarlatina whensoever occurring; but I believe it to be of special importance under the peculiar circumstances we are now considering. Experience shows (as Copland remarks) that any undue action of the bowels in the progress of scarlatina is apt to be followed by peritoneal inflammation; and this tendency must be greatly augmented in puerperal patients who, as such, are always more or less predisposed to abdominal inflammation. I may mention two cases which will serve to illustrate these remarks:—

M. M., aged twenty-eight, was confined, at 2, p.m., of her third child, after an easy labour. The next morning her pulse was 120, face flushed, and skin very hot. In the evening she complained of headache and soreness of throat; the rash was just beginning to show itself on the chest. She passed an unquiet night, and at early visit of third day I found the pulse 128, urgent thirst, tongue coated; bowels two or three times freely opened by a dose of the ordinary black bottle (senna and salts), administered this morning without my knowledge. The rash has come out a little more on the trunk. Towards evening she became much prostrated; the pulse rose to 132, and she was oppressed and drowsy. Wine was

now freely allowed her; nevertheless her condition for the next few days was such that I almost despaired of her recovery. There was great prostration, with recurring attacks of purging; and it was only by the liberal use of wine and brandy that her strength was kept up until the disease began to pass away. The purgative here employed was by no means drastic, nor was its operation violent, and yet its injurious effects were very manifest.

If the bowels very much need to be relieved it will be best accomplished in these cases by a lavement, or, at most, by a small dose of castor oil, or a mild rhubarb draught. In the following case even a dose of the former, given on the fourth day of the disease, was productive, I believe, of irreparable mischief.

M. B., aged thirty, was confined of her third child at 4 a.m.; her labour having been of only five hours duration. The next day she was hot and feverish, but there was nothing to account for these symptoms. Late in the evening, however, the characteristic rash of scarlatina began to appear on the chest, and the following morning was well out on the trunk. She was weak and oppressed, and the pulse 120.

Early on the fourth day she got half an ounce of castor oil with one drachm of compound tincture of senna. This operated rather briskly, late in afternoon. From this forward there was a constant tendency to relaxation of the bowels, so that her diet and medicine had to be regulated with a view to restraining their action. She died on the twelfth day, exhibiting unequivocal symptoms of peritonitis with effusion; for some days previously the belly was tumid.

I regret much to say that this patient got no wine or brandy throughout the progress of the disease. Her case occurred in the year 1854, shortly after my taking charge of the hospital, and I was not then aware of the very great importance of having early and free recourse to the administration of stimulants in treating the scarlatina of child-bed. In fact, my mind was then strongly imbued with the dread of giving a diffusible stimulant to a recently delivered woman; I confess it was some time before I could divest myself of this feeling, and venture to regulate my practice by a rational view of the patient's symptoms and actual condition.

This brings me to speak of the second point, in connexion with

the treatment of these cases. My own experience leads me to attach much importance to an early exhibition of stimulants; in fact, to commence their use as soon as the disease has appeared, unless some special contra-indication be present.[a] It has already been stated that of the thirty-four cases contained in this report, six died of what we may call the primary or direct effects of the scarlatinal poison acting upon the nervous centres.

It is worthy of note that a considerable proportion of the cases in this clinical report were primiparæ, viz., twenty-one out of thirty-four; but the circumstances of age will perhaps sufficiently account for this, whether it be true or not that the liability to scarlatina lessens with advancing years after the period of puberty. The death rate is not very widely different in the primiparous and pluriparous classes; in the former six out of twenty-four having died, and in the latter four out of fourteen.

The frequency of scarlatina among puerperal women seems to vary much at different times; and I am inclined to think that the prevalence of the disease among this class of patients does not altogether depend upon the general prevalence of scarlatina, but that some other influence is in operation. Facts are as yet wanting to determine this point. Most of the above cases occurred in the years 1854 and 1855, and the remainder in the year 1861. Many of them were distinctly traceable to contagion before admission into hospital.

In Dr. Collins' Report of the lying-in hospital no mention is made of any such complication of childbed having presented itself, although his report extends over a period of seven years, viz., from November, 1826, to November, 1833.

Dr. Hardy's and my Report of the same hospital, embracing the years 1842–3–4, contains one case of scarlatina, which proved fatal on the seventh day. Now this was, I think, the only case of scarlatina, certainly the only fatal case, which took place in the hospital, from November, 1840, to November, 1847, which was the period of Dr. Johnson's mastership. For the first three years, at all events, of this septennial period, scarlatina was very prevalent in this city, as we know from the writings of Dr. H. Kennedy and of Dr. Graves.

In the Report of the hospital under Dr. Shekleton's mastership

[a] In a paper read before the Obstetrical Society, Session 1862–3 (and published in No. lxxi. of this Journal), Dr. H. Halahan has corroborated most strongly the above remarks on the value of stimulants in the treatment of such cases as the above.

(from 1847 to 1854), published by Drs. George Johnston and E. B. Sinclair, only two cases of scarlatina are mentioned. I subjoin the the history of each of these cases :—

"One woman fell a victim to this disease (scarlatina) after a purely natural labour. She was admitted in 1854, aged twenty-five, for her first pregnancy, and delivered of a healthy girl, after a labour lasting but three hours. She was attacked with the disease on the day after delivery, and died on the twelfth day of the secondary fever."

The other case occurred amongst those of forceps delivery. "Delay was in the second stage from inertia, and was of fifteen hours' duration. During the latter half of this period the head made but trivial progress. Delivery was easily effected with the forceps, and a healthy girl extracted. On the evening of the second day she complained of headache and sore throat, and had a quick pulse. An anodyne diaphoretic was ordered. Next morning the rash of scarlatina appeared, and the case terminated fatally on the fifth day; the immediate cause of death having been rapid effusion into the ventricles of the brain."

A very severe epidemic of malignant scarlatina appeared among the patients of the Vienna Lying-in Hospital in the year 1799, an account of which was published by Malfatti, in *Hufeland's Journal*. This was a dangerous form of disease, proving fatal in most instances upon the third or fourth day. It presented a very low asthenic type, and was most successfully treated with stimulants; but no stronger stimulants than camphor, assafetida, castor, and such like, seem to have been employed. In cases where it seized the patient soon after delivery, its fatality was greater than when its invasion was deferred to a later period.

Before closing I would wish to observe, that some writers have applied to scarlatina, occurring in the puerperal state, the designation of "puerperal scarlatina," which is a manifest error of nomenclature. Scarlatina is not a disease belonging to, or in any way dependent upon, the puerperal state; it is merely an intercurrent disease, accidentally complicating childbed, and therefore no more deserves to be called "puerperal scarlatina" than it should be called "traumatic scarlatina" if invading a patient confined to bed with a scalp wound; or than hooping-cough making its appearance in childbed should be styled "puerperal pertussis."

Art. VII.—*On Chromidrosis.*—Thesis for Degree of Doctor Medicine, Trin. Coll., Dub. Read before the College of Physicians. By Arthur Wynne Foot, M.D.

The term chromidrosis (χρῶμα, pigmentum ; ἱδρώς, sudor) is applicable to those conditions of the perspiration in which it assumes a colour—red, yellow, green, blue, or black. There are reasons for believing that all the pathological pigments which appear in this secretion owe their tints to modifications of the colouring matter of the blood, which colouring matter is being continually set free by the disintegration of the blood corpuscles; and being itself of a very indestructible nature, but at the same time capable of undergoing many chromatic alterations, it may, under peculiar circumstances, appear on the surface of the body, and impart very various tints to the cutaneous exhalations. The term chromidrosis is strictly to be confined to the transudation of colouring matter alone, without any of the cellular constituents of the blood, for, from the nature of the capillary wall, which is absolutely homogeneous and continuous as a film of collodion, it is not possible that particles so large as the blood globules could pass through without a lesion of the vascular membrane; when a lesion does occur from internal congestion or external violence the blood will appear on the surface of the body as a hemorrhage or as an extravasation, but not as a secretion. Therefore to qualify any coloured secretion appearing on the surface of the body for the title of chromidrosis it is necessary that microscopic examination should detect no constituent which would involve a rupture, or compromise the integrity of the capillary wall. The presence of crystals of urea, ("On Urea on the Skin and Uremia," translated by William D. Moore, M.D., *Med. Press*, May 3, 1865, p. 419) of chloride of sodium (Prout, in *Lond. Med. Gaz.*, Vol. XV., October 1834), or of urate of soda on the skin presents no difficulty on account of their solubility previous to excretion.

The integrity of the capillary wall must be particularly insisted upon in considering the red form of chromidrosis, and the test of that integrity will be the presence or absence of the red corpuscles; this test excludes many of the cases of the so-called *sudor cruentus*, all the cutaneous hemorrhages which supplement menstruation, and those which are due to the hemorrhagic diathesis and to purpura; it will also be found a useful help in detecting deception.

The red sweating then will become a more rare phenomenon than might have at first appeared, and the only trustworthy cases of it which I have been able to find are those of Landerer, an Athenian chemist (Buchner's *Report*, Second Ser., Vol. V., p. 234), and Heller, of Vienna (Thudichum *On the Urine*, p. 321). They observed it in the axillæ of fever patients; the condition of the blood in fever, it will be remembered, is one most favourable to the transudation of the colouring matter; under the influence of fever poison the blood cells, possessing little durability at any time, are peculiarly prone to disintegration, the blood is found unnaturally fluid, the red corpuscles loosely aggregated, in amorphous heaps, crenate, and mis-shapen, as if undergoing solution (Murchison, *Treatise on Continued Fevers*, p. 238). Landerer considered the red sweat to derive its colour from the urine pigment, which is so closely related to hematin that Parkes (*On Urine*, p. 30) thinks it is not going too far to assume the amount of urine pigment to be a measure of the metamorphosis of the blood cells; it appears in the fiery red pigment of febrile urine, and its excess in the renal secretion seems to indicate rapid alteration of hematin.

There can be no doubt that blood appears most unexpectedly on the apparently unbroken surface of the body, and it will be useful to contrast two well-marked cases of cutaneous hemorrhage with the coloured sweatings, to show that they have no analogy to the physical process by which perspiration passes to the outside of the body. In 1863 Franque, under the title of hemorrhagic sweat, published the case of a female, aged forty-five, whose catamenia were regular, but who had three times bled from the skin after long continued and severe convulsions, brought on by mental emotion. On a fourth occasion Franque himself was present; the patient had suffered for four days previously most violent pricking pains along the vertebral column, in the left ear, the forehead, the left arm; after the convulsions had lasted an hour, there broke out all over the body a copious sweat, which appeared red at the parts which had been the seat of pain. It derived its colour from actual blood, containing red globules. The convulsions then gradually subsided. As the skin appeared unbroken Franque presumed that the hemorrhage took place from the sudoriparous glands (*Syd. Soc. Year Book*, 1864, p. 179). In 1857 Huss, of Stockholm (*Archiv. Gen. de Méd.*, 1857, p. 165) published a case of spontaneous hemorrhage from the skin, without excoriation of the epidermis, which came

under his notice in the Seraphim Hospital. The seats of the hemorrhage were nearly all hairy—the scalp, the axilla, the pubis, the edges of the eyelids—and were all on one side of the body except the right ear; the exuded blood was of arterial colour, and had all the physical and microscopical characters of healthy blood. The exudation occurred at various intervals of time, and lasted for various lengths of time; it was generally provoked by mental emotion, but appeared independently of that cause; it had no connexion with menstruation, and paralysis of motion and sensation in both extremities of the left side followed the attack. The explanation offered by Prof. Retzuis was a temporary spasm on the venous side of the capillaries, the course of the blood being thereby partially intercepted; the pressure of the blood coming from the heart and arteries against the points where the circulation was intercepted occasioned a lesion in the capillary vessels or the finest twigs of the arteries, and the hemorrhage ensued. Vicarious menstruation was not concerned in the production of the phenomena in these cases, because in both the uterine functions were regular; and observations of Cruveilhier (*Anat. Path.*, Vol. IV., p. 201) show that cutaneous hemorrhages may exist with normal or even with profuse menstruation.

In 1842 Dr. Todd (*Dub. Med. Jour.*, Vol. XXII., p. 12) examined the opinion that hemorrhage might occur by a sweating of the blood through the coats of the vessels, without rupture; and the results of his examination were, that from microscopic investigation of the diameter of the blood cells, he was led to deny the possibility of the escape of blood, in an unaltered state, through the walls of the capillaries, and to assert that all hemorrhages take place by rupture of blood vessels. On this subject Virchow (*Cell. Path.*, p. 113) has more recently spoken in terms of the most positive certainty, and confirms the opinion of Dr. Todd, that a transudation or diapedesis of the blood through its limiting membranes, without rupture, cannot for an instant be admitted; and although we may not, in every individual case, be able to point out the exact site of the lesion, he believes it so inconceivable that the blood, with its corpuscles, should be able to pass through the walls in any other way than through a hole in them, that he declares the subject to be one on which discussion is inadmissible.

In cases of jaundice yellow perspiration has been observed. From the researches of Valentiner and Kerner the colouring matter of the bile seems to be identical with that of the blood.

The colouration of the secretion of the skin in jaundice is not to be received as an evidence of the most intense impregnation of the blood with bile-pigment, because Cheyne (*Dub. Hosp. Reports*, Vol. III., p. 269) observed this phenomenon when the indisposition was so slight, that until his patient's linen was found to have acquired a saffron colour there had been no intention of seeking medical advice. Chomel (*Académie des Sciences*, 1737, p. 69) was acquainted with this symptom, and Andral (*Clinique Médicale*, Tom. II., p. 373) describes a case in which the sweat coloured the linen yellow, and the urine contained the colouring matter of bile, although the skin and conjunctivæ exhibited no jaundiced tint. On the other hand, it is remarkable that when every other secretion of the body has a bilious tint, and the solid tissues are deeply stained, the perspiration will remain uncoloured. The colouring matter in cases of yellow perspiration due to icterus, is pretty well ascertained to be caused by cholepyrrhin, the pigment of the bile. Breschet (*Jour. de Magendie*, Tom. I., Paris, 1821) was the first to adduce arguments in support of the derivation of this pigment from the blood. Virchow's investigations upon pathological pigments have proved that under certain circumstances a yellow substance is formed from hematine, which in its relation to solvents and reagents, bears a close resemblance to cholepyrrhin; and the researches of Funke would appear to indicate the possibility of a direct transformation of hematine into cholepyrrhin. These hypotheses may throw light upon the pigmentary changes which are observed in pyemia, chloroform-narcosis, and after the bites of some venemous serpents, if it be admitted that there may be a conversion into yellow pigment of the hematine liberated from the dissolving cells of the liquified blood. In the removal of yellow pigment from the blood by perspiration, the relation between the duties of the skin and renal organs is well exemplified. Next to the kidneys, the sudoriparous glands take the most active part in its elimination, although the quantity of colouring matter which they excrete is always very inconsiderable in comparison with that thrown by the kidneys. The bile-pigment makes its appearance in the renal secretion sooner than it does upon the skin, and serous effusions in the various cavities of the body become tinged even earlier than the urine. The sudoriparous glands do not undergo any important changes of structure in yellow sweating—their contents appear of a yellowish tinge, but are not the seat of much pigmental deposition (Frerichs' *Diseases of the Liver*, Vol. I., p. 103). The cutaneous secretion

has been observed of a yellow colour during the exhibition of rhubarb. The brown and red resins contained in this drug have been shown by Schlösslerger to be the principles in it which communicate to the urine and perspiration a yellow or red colour, according to the alkaline or acid states of these secretions. Yellow perspiration has also been noticed after the long-continued use of saffron, from the absorption of the colouring matter of the stigmata of that plant. I have not been able to meet with any observation on the effect of santonine upon the perspiration; but this white crystalline substance, which is rendered yellow by sunlight, and is transformed by the alkalies of the blood into coloured modifications, sometimes gives rise to xanthopsy, a phenomenon also observed in jaundice.

The bile contains two colourless resinous acids, the cholic and choleic acids of Strecker, corresponding to the glycocholic and taurocholic of Lehmann, which can be converted in the laboratory, by the action of acids, into a colour-producing substance called chromogen by Frerichs (*op. cit.*, p. 91). The same colour-producing substance is formed in the living body after the injection into the blood of the colourless biliary acids. The chromogen formed experimentally outside the body will, by simple exposure to the air, or more rapidly by the addition of NO_5, exhibit alterations of tints corresponding in every respect with the colouring matter of the bile, cholepyrrhin, a substance rich in carbon. In the cases where chromogen is formed after the injection of colourless bile into the living body the oxygen derived from respiration is referred to for the development of colour. It is known that none of the elements of the bile, except the colouring matter, can be found in the body even in cases of intense and universal jaundice. This conversion of the colourless biliary acids into a colour-producing substance seems analogous to what is observed after the administration of santonine, and may find a parallel in the conversion of white indigo into blue indigo. Several years ago Heller, of Vienna (*Archiv. für Path. Chimie*, 1853, p. 121), announced that there exists in many urines, both normal and morbid, a substance, itself colourless or nearly so, which gives rise by internal changes to several pigments; the urines in which it occurs are often pale, and poor in normal pigment, but generally very acid. He called this colourless substance uroxanthine From the difficulty of isolation the exact nature of this substance was not understood till recently. Dr. Schunck, of Manchester, in examining some urines, observed in them a substance

identical with a body also discovered by him in his investigations upon indigo, and which he had named vegetable indican. There appears great reason to believe that this substance, which he called vegetable indican, is the same as Heller's uroxanthine (Parkes *On Urine*, p. 196). This indican, when treated with acids, yields six insoluble pigments, of which indigo-blue and indigo-red are the chief; and some soluble substances, such as sugar and leucine, which it will be recollected are also found in the liver Heller's uroxanthine also, when acted on by acids, and even by simple exposure to the air, very easily yields a blue colouring matter, which he called uroglaucin, and which appears as similar to indigo-blue as the colourless uroxanthine was to white indigo. These statements point to a strong analogy between animal starch and vegetable starch, and between animal sugar and vegetable sugar. The connexion between hematine and the ordinary urine pigment is generally accepted; the connexion between hematine and biliary pigment is very probable; one of the effects of acids upon a resinous acid of the bile from which its pigment is obtained, is similar to what is observed by the oxidation of uroxanthine. Glycocholic acid, when acted on by SO_3, has the property, upon exposure to the air, of forming gorgeously-coloured combinations. If the amorphous colourless mass resulting from the action of sulphuric acid upon this white resinous biliary acid, is placed upon a piece of filtering paper, it dissolves, and there is produced a ruby-red spot, which soon presents a blue margin, and after a short time assumes an indigo-blue colour (Frerichs, *op. cit.*, p. 90, note).

Leaving now the red and yellow perspirations, the way is partially cleared for the consideration of the next form of chromidrosis, or coloured sweating—that in which the cutaneous secretion is tinged blue. It will be impossible to avoid taking account of the occurrence of blue pigment in other secretions, such as the urine, the milk, and in suppuration. Dr. Purdon, of Belfast (*Dub. Quart. Jour.*, Vol. II., p. 445), has published the case of a woman, aged forty, who, suffering much from cardiac anasarca, became subject to a clear serous discharge from the trunk and limbs, so abundant as literally to wet her bed; this serous discharge occasionally ceased, and at such times the œdema and dyspnea were very much aggravated; after some time the discharge changed very much in its character, being nearly alternately blue and straw-coloured, or yellow, almost like pure bile. She was made aware of the adven of the blue discharge by a mouldy smell and prickly sensation

which invariably preceded it for twelve hours; the yellow discharge was not attended by either of these premonitory phenomena. The blue discharge always appeared along the posterior part of the chest, the yellow generally proceeded from the abdomen and back of the neck, and rarely from the back; the blue never appeared on the abdomen; the two colours were sometimes procured from the different parts at the same time; the discharge from the extremities was never coloured. The yellow colour was tolerably permanent, the blue faded; she had not taken any preparation of iodine for some years; in place of the catamenia there was a discharge of a reddish-green colour. Dr. Gibb (*Brit. Am. Jour. Science*, N.S., Vol. VI., p. 201, 1850–1) has collected ten cases of blue suppuration, including two observed in Dublin; in one of these cases, which was communicated to the College of Physicians by Dr. Croker (*Dub. Med. Jour.*, Vol. II., p. 367) the dark blue stain imparted to lint was examined by Dr. Apjohn, who pronounced that it was *not* Prussian blue, as had been previously believed. The subject from whom this coloured pus was obtained suffered from a morbidly increased secretion of gastric acid, so much so that her throat, fauces, and tongue were excoriated in vomiting; the suppuration which was set up in the track of a seton assumed an inky dark-blue colour, which Dr. Apjohn concluded was the result of the action of muriatic acid on the purulent matter. This case recalls to mind the observation of Heller, that his colourless uroxanthine normally present in urine, and probably derivable from hematin, was converted by the action of acids into the blue pigment uroglaucin. In 1860 M. Fordas (*Jour de Chimie Méd.*, Tome IX., 1863, p. 577) laid before the Academie des Sciences his researches upon the colouring matter of blue suppurations which he had succeeded in isolating, after great trouble, in a crystallized form, and which he proposed to call pyocyanine. The pyocyanine presented itself in the form of blue prismatic crystals grouped in various ways, sometimes in the form of a cross or rosette, sometimes as long needles tied in bundles or radiating in different directions from one point. The appearances of Heller's crystals of uroglaucine are precisely similar (*On the Urine*, Vogel and Newbauer, p. 45). After having isolated pyocyanine he continued his observations on two most protracted cases of blue suppuration in the Charité Hospital, under M. Velpeau, and, in addition to pyocyanine, has obtained also a yellow colouring matter, which he calls pyoxanthose. This discovery of a blue and yellow

colouring matter in suppuration may throw some light on the simultaneous discharge of the two pigments in Dr. Purdon's case, and a combination of the blue and yellow matter may point towards the explanation of such green colourations as are seen in the pus of cerebral abscesses, in the deranged menstrual secretion, and in conditions of the lochial discharge. Green urine has been seen in Bright's disease, peritonitis, cystitis, and spinal disease; the fluid in eczematous vesicles, at first pale, has been observed to become green by exposure to the air; and in the same case, the urine, slightly green when passed, became much more deeply tinted afterwards (Parkes, *op. cit.*, p. 201).

Blue pigment has been observed in the urine as well as in the perspiration, and in purulent matter; Prout sublimed the blue urinary pigment, and recognized it to be indigo blue. Other observers repeated his experiments, particularly Dr. Hassall, who showed that in many urines the indigo blue could be produced by exposure to the air. Schunck next procured it from the colourless indican, which seems almost identical with Heller's uroxanthine; and the elementary analysis of Kletzinsky shows the very closest similarity in theoretical constitution between the two—between indigo blue and uroglaucine, the latter being, with indigo-red, one of the products of oxidation of uroxanthine. Milk, finally, has been found tinged with blue (*Edinb. Vet. Rev.*, 1863, Vol. V., p. 656). The milk of some cows having assumed this colour, M. Mathieu, veterinarian at Sévres, made several experiments to ascertain whether the phenomenon of blue milk depended on the cow or on the dairy. In one case, where a single cow was kept, the milk of which showed this peculiarity, new dishes were employed, and still no amendment took place. M. Mathieu drew milk into two new vessels, and placed them in a dairy; he then drew milk into two glass bottles, stopped them carefully, took them to his residence, six miles distant, and placed them in a chamber, the temperature of which was 15° cent. Three days later blue spots showed themselves on the surface of the cream in the two glass vessels; and after another three days having occasion to visit the dairy where the milk had been set at the same time, he found that it too was covered with blue spots. In another case two cows were kept, one black, the other white, the milk was always mixed, but soon became covered with blue spots, which interfered with its sale. He then caused the milk to be placed separately in two new vessels, drew some

into glass bottles as before, took them home, and placed them in a room different from that of the former experiment. On the fourth day the milk of the white cow was covered with blue spots, while that of the black retained its original colour. These experiments were repeated twenty times, with the same results invariably, from which he concluded that the phenomenon was due to a morbid condition of the secretion in the cow. It is open to consideration whether the blue coloration of the milk was not due to indigo-blue, the result of oxidation of uroxanthine. It is known from Sir H. Marsh's observations that the biliary pigment may simultaneously tinge the urine and the secretion of the human mammary gland; and if one pigment, a yellow one, derived from hematin, may appear in both the renal and lacteal secretions, the same privilege may be accorded to another pigment, a blue one, also connected with hematin.

Dr. Hassall's communication to the Royal Society on the frequent occurrence of indigo in human urine, and on its chemical and physiological relations, was made in 1853. Some of the conclusions which he arrives at are, that indigo-blue is frequently found in human urine, the quantity being subject to the greatest variation; in some cases a pellicle of nearly pure indigo extends over the entire surface of the liquid, while in others it is so small that it can only be detected by means of the microscope. For the formation of this indigo it is in general necessary that the urine should be exposed to the air for some days in an open vessel, oxygen being absorbed, and the blue pigment being developed. Whatever, therefore, facilitates oxygenation, as free exposure to light and air, warmth and sunshine, hastens the appearance of the blue indigo; hence, in Summer the changes described take place much more quickly than in Winter. On the contrary, these changes are retarded, or even stayed, by exclusion of the atmosphere. Blue indigo may even be deprived of its colour, and reformed alternately, according as air is excluded from or admitted to urine containing it. From some of the cases recorded, it would appear, however, that blue indigo is occasionally found in the system, and is voided as such in the urine. There is usually found with the blue indigo, when the amount of this is considerable, a brown extractive, sometimes in large quantity, the aqueous solution of which, by further exposure to the air, yields a further supply of coloured indigo, and which clearly resembles hematin in its chemical manifestations and elementary composition. There is, therefore, great reason for believing that in the majority

of the cases recorded, the blue indigo was derived from altered hematin, although it is at the same time probable that it is in some cases formed from modified urine-pigment, which itself is also regarded as a modification of hematin. Between the greater number of the animal colouring matters there is the closest relationship in chemical composition, so that the transformation of the one into the other would appear to be both easy and natural. Although the exact steps of the conversion of hematin into indigo cannot yet be stated, some hypotheses have been suggested as worthy of mention (Parkes, *op. cit.*, p. 199)—thus, one equivalent of hematin and twenty-two of water will give the elements of two of indigo-blue and one leucin:—

Hematin				Indigo-blue			Leucin		
C	H	N	O + 2 H O = 2 C	H	N	O +	C	H	N O
44	22	36		16	6	2	12	12	4

Another formula is, that hematin with water and oxygen will give indigo-blue, benzoic acid, and ammonia:—

Hematin				Indigo-blue			Benzoic acid			Ammonia	
C	H	N	O + H O + O_3 = C	H	N	O +	C	H	O +	H	N
44	22	36		16	6	2	28	12	8	6	2

Though putting no more faith in these hypothetical reactions than any conjectural formulæ in organic chemistry deserve, yet I think that after considering them we may be in a better position to approach the remaining forms of chromidrosis, which from their local characters and striking peculiarities have always excited much attention. It is a subject of congratulation that we are indebted to the acute observation of Irish physicians for a large proportion of the most remarkable cases of cutaneous secretion of pigment that have been put on record—Dr. Law, Dr. Neligan, and Dr. Banks, in Dublin, and Dr. Purdon and Dr. Reade, in Belfast, have made most valuable communications on this subject.

The case recorded by Dr. Banks was an unmarried female, aged twenty-three, the daughter of a fisherman, and she resided at Skerries, in the County Dublin. She was engaged to be married to a man who was hereditarily predisposed to insanity, and who committed suicide by hanging himself shortly before the time fixed for their marriage. She went to her lover's cottage, and her mother sent her into the room in which he was suspended. She

knew something dreadful had happened, but did not know exactly what it was, until, on rushing into the chamber, she struck suddenly and violently against his lifeless body. She became maniacal, with suicidal propensities, and three months after had to be committed to the Richmond Lunatic Asylum, where, for upwards of two years, her state underwent little or no change. In the meantime she had suffered from deficient menstruation and periodic hemoptyses.

When Dr. Banks first saw this woman his attention was attracted by a remarkable discoloration round the eyes, but chiefly beneath and extending to the side of the nose; and he states the appearance to have exactly resembled what one would imagine to have been produced by painting the part with Indian ink, or perhaps, he says, rather with Prussian blue. The discoloration round the eyes had existed since the cessation of the catamenia, but became of more vivid hue during the continuance of the periodical hemoptyses. She continues still to present this discoloration, but in a slighter degree.

Laycock (*Med. Ch. Rev.*, No. LIV., p. 464) mentions a very similar case in a woman, aged twenty-four, affected with melancholia, and who became the inmate of an asylum. She presented a symmetrical discoloration of the face; but the eyelids, both upper and lower, were, in particular, deeply tinted with pigment. The influence of emotional disturbances of the nervous system in the production of pigments is very strange. The effect of fright upon the colour of some reptiles, as the chameleon and frog, has been shown, by Mr. Lister in a communication to the Royal Society, June, 1857, to be due to the influence of the nerves distributed to the skin.

Another case of blue discoloration was observed by Dr. Billard, in a girl of sixteen, who presented, on the face, neck, and upper part of the chest, a beautiful blue coloration, extending chiefly on the forehead, the alæ nasi, and around the mouth. When the face was rubbed with a white cloth, the cloth became stained with the colouring matter, leaving the skin of its natural hue. This girl had menstruated for two years, and there had been no deficiency of this secretion. The blue appearance round the eyes presented itself when she worked in a confined and hot place. At the end of a year the whole forehead and face had become blue, so that the attention of persons who met her was attracted. After the use of certain medicines, an abundant perspiration was observed, and simultaneously a sensible diminution of the urine, and a considerable increase of the blue colour. The intensity of the blue

coloration was influenced by the activity of the perspiration, which stained her linen blue. The blue secretion was submitted to analysis; alcohol and ether easily dissolved it, and evaporation of the solution left a residuum of a blue colour; concentrated HCl produced no change on the stained linen; concentrated NO_5 destroyed the colour; slightly alkaline warm water decolourized the linen; no indication of iron could be detected in it (*Archives Gen. de Med.*, Tome XXVI., p. 453). Again the observation of Heller suggests itself, that in another secretion the urine, in many ways analogous, and also closely correlated to that of the skin, the blue colouring matter, uroglaucin, was produced by simple exposure to the air; from his colourless principle, uroxanthine, and the close connexion of both of these substances in elementary composition to hematine is to be borne in mind. The great richness of the colouring matter of the blood, of uroxanthine, and also of uroglaucin in carbon, may assist in explaining the occurrence of this coloured secretion at catamenial periods. According to Andral and Gavarret the maximum secretion of CO_2 occurs at this period in the female organism; and if the catamenial discharge is to be regarded as a mode of eliminating carbon, and that means of secretion is interrupted, the formation of CO_2 being constant, we will be less surprised to find the skin engaged more actively than usual in the performance of that duty. It may be in this direction we are to look for an explanation of the cutaneous discolorations in gout and rheumatism. I have lately seen all the swollen phalangeal articulations of a gouty subject so dusky a brown as to attract attention at once; the colour was deepened during an intercurrent attack of pericarditis. In seven cases of chronic rheumatism, and cardiac disease of rheumatic origin, Laycock (*Med. Chir. Rev.*, No. LIV., p. 475, 1861) observed pigment deposit on the skin, together with more or less pigment in the blood. His explanation is, that if the supply of oxygen to the system be not sufficient for the transformation of lactic acid, $2HO\ C_{12}\ H_{10}\ O_{10}$, (assuming that the phenomena of rheumatic fever are due to the presence, in excess, of this acid) into carbonic acid and water, and it undergoes no further changes, then it appears in the urine; but if the carbon of the flesh be not oxidised into lactic acid, then it is excreted as colouring matter in some form or other.

The next case which I shall refer to is one of five published by Leroy de Mericourt, which exhibits a transmission from blue to black pigmentation. The subject of what I call the transition-case

was a woman in her twenty-first year, of good constitution, whose catamenia had always been regular, and in sufficient quantity, from the age of seventeen. Without appreciable cause, and three days after the cessation of the catamenial discharge, she perceived that the under eyelids had assumed a *blue* colour, which on the following day became of a deeper tinge, closely resembling Indian ink. The discoloration was not confined to the lower eyelids, but extended a little to the cheeks. The colour was rendered more intense by heat, exertion, emotion, or fatigue, which are also causes promotive of the perspiratory secretion; it persisted during the night, and soon acquired the hue which it retained during the day. When examined under a magnifying glass the colour was found chiefly accumulated in the areolar grooves—the seat of the most marked depots were the folds of the lids. It had the appearance as if the girl had passed some time in an atmosphere charged with coal dust, and had washed her face, except the under eyelids. The colour was due to a multitude of little black grains deposited as an efflorescence on the surface of the skin. On rubbing the abnormally-coloured parts with a white cloth it is stained black; but neither by this nor by washing was it possible to restore the integuments to their ordinary colour—the shade was merely rendered less intense, and soon became as deep as before. This may be explained by the precipitation of part of the pigment in the superficial layers of the true skin, of which we have examples in the precipitation of metallic silver, in a state of minute division, from its soluble salts, after the protracted use of that metal (J. Van Guens, *Archiv. für die Holländischen Beiträge zur Natur und Heilkunde*, 1857, Band I., Heft I. und II., p. 106), and as is seen in the occasional fixation of colouring matter in the skin, observed after exposure to solar light or artificial heat, in the various degrees of sunburn, or the tâches de brulure on the legs of old persons who sit much before the fire.

The colouring matter of the skin of the negro is deposited in the deepest and youngest layers of the epithelium; it was removed from the skin and isolated by Beclard, by macerating the skin of the scrotum, which is peculiarly dark in the coloured races; the rete mucosum, in becoming resolved into a kind of mucosity, tinged the water, and allowed an impalpable brown powder to fall to the bottom of the vessel. He believed it to be very similar to the colouring matter of the blood, and quotes the chemical observations of Davy, Coli, and others, as having demonstrated what Blumenbach had long ago advanced, that the pigment of the skin is highly

carbonaceous (Beclard, *Elements of Gen. Anat.*, trans. by Knox, p. 146).

Le Cat, a surgeon at Rouen, examined chemically the colouring matter of the cuttle-ink, and showed its identity with that of the skin of the negro and of the choroid coat of the eye. The conversion of hematin into pigment seems to be effected by the influence of agents addressed sometimes to the hematin itself, sometimes to the iron it contains. Rokitansky cites the effects of strong mineral acids, as the sulphuric, which, introduced from without, darken and blacken the blood with which they come in contact. Carbonic acid gas (evolved, along with carbonic oxide gas, out of glowing charcoal) acts in the same manner upon the capillaries when a stream of it traverses the fauces, and a similar influence is exercised by acid secretions generated in the organism itself, as was seen in the case above referred to, and observed by Dr. Croker, and in the coloured softening of the stomach. The frequent conversion of red hemorrhagic exudates upon the peritoneum into black strata is most probably founded upon the influence of the intestinal gases upon the hematin. In common with ammoniacal gas it is principally the sulphuretted hydrogen of the bowel which, acting by exosmosis upon the iron of the hematin, enters with it into a black combination, namely, sulphuret of iron (*Pathological Anatomy*, Vol. I., p. 211).

In 1802, Dr. Marcet (*Med. Chir. Trans.*, Vol. XII., p. 37) saw a young woman who was subject to attacks of cutaneous discoloration; the colour was black or dark *purple;* the toes, legs, hips, and face were in succession liable to these attacks. The cutaneous affection usually began with a tingling of the parts, soon followed by a considerable swelling or puffiness over an extent of several inches, which lasted for some hours, and was ultimately followed by the appearance of the pigment. Her urine acquired a black colour during daily paroxysms partaking both of the febrile and hysterical character. This black urine was not investigated at the time by Dr. Marcet, but twelve years afterwards he observed this curious phenomenon, black urine, in a subject who certainly would not be accused of any hysterical disposition, at least in the ordinary sense of the word. This black urine was passed by a healthy male infant of seventeen months. Almost immediately after its birth it was observed that the child's urine tinged his napkins of a dark purple hue, which alarmed his parents very much at first; but as the infant's health remained perfect the alarm subsided, although

this peculiarity never abated for any length of time. When the child had reached the age of about nine months, and when the urine could be more easily collected, it was found that, though perfectly clear on being first discharged, it assumed in a very short time a dark colour, somewhat like that of port wine, which became darker by standing; it was then quite black and opaque, without any sediment or turbidness; on the surface, when examined in a strong light, a dark purplish hue was discernible, giving the liquid the appearance of a strong solution of liquorice. There were occasional variations in the degree of coloration, and it sometimes even totally disappeared; it was observed to prevail in the greatest degree when the child's bowels were confined. A specimen of this urine, quite clear when passed, sp. gr. 1022, was at the end of two days quite black, had an ammoniacal smell, and was sensibly alkaline; after an interval of six weeks it remained precisely in the same state, and after a lapse of seven years was still perfectly unaltered, having preserved its colour, having deposited no sediment, and possessing the same ammoniacal pungency, without any distinct urinous smell. No red globules could be detected in it, in a microscopic examination of it made by Dr. Wollaston; no iron was detected in the black deliquescent residuum left on evaporation.

This urine was further examined by Dr. Prout; the addition of dilute acids produced no immediate change of colour in it, but after standing some time a black precipitate slowly subsided, leaving the supernatant fluid transparent and but slightly coloured.

Schilling mentions the case of an infant, with previous hyperemia of the skin, whose entire surface was covered with a lamp-black matter, which came off with the linen (*De Malanosi*, p. 32. 1831).

The remarkable drawing which I hold in my hand is the portrait of a young lady, fifteen years of age, by whom black matter was voided in the urine and feces, by vomiting, and also appeared on the face. The right half of the forehead represents the discoloration of two days' duration, and the opposite side of five, showing the difference in quantity of the black matter secreted during the longer interval. She was a patient of Dr. Read, of Belfast, and, having been brought to London, her case attracted so much notice that it was communicated to the Medico-Chirurgical Society by Sir B. Brodie (*Med. Chir. Trans.*, Vol. XXVIII., p. 611. 1845). The discoloration commenced on the left under eyelid, near the internal angle of the eye, appearing at the commencement as a brownish spot, which in the course of four or five days assumed a

jet black colour, and gradually extended to the entire forehead and eyelids of both eyes. The discoloration never appeared on any other part of the body, and on the forehead was accurately limited by the hair. Attempts to wash the black matter off caused so much pain, from the sensitiveness of the skin, that she discontinued to do so. The quantity of black matter removed on one occasion by soap and water was sufficient to darken four basins of water as black as Indian ink. Some letters of this lady's father to Dr. Read show the state of perplexity her medical attendants were in to account for the phenomenon:—"They were so much at a loss," writes her father, "that they fell into a curious mode of solving their doubts, and declared the child had rubbed some black stuff upon her own face, for some causes to them (and to me, I declare) unknown. This took such firm hold of their minds that, having met, they called for warm water and soap, with which they certainly removed all appearances of blackness from her countenance, leaving the skin perfectly smooth and unruffled. This operation, you may well imagine, only tended to confirm them in their strange opinions, and I had to sit one whole day watching her most narrowly, and locked her up at night by herself, before they would believe that some imposition had not been practised. However the discoloration returned in the course of five or six hours; and, fortunately for the sake of the poor child's character, it came on gradually, in the presence of Major Greenwood and several others, while we sat at the dinner-table." On a subsequent occasion her father writes:—"The medical men still entertain the supposition of a trick—at least they were so sceptical that one of them came on Monday last, and, after washing all traces of it off from her face, remained with her eight hours, when, from his own observation, he was satisfied it proceeded from natural causes; and thus, I trust, all these nonsensical doubts are for ever set at rest."—(*Dub. Med. Prsss*, Vol. XV., p. 204).

It is admitted by Mr. Teevan that this patient had no tendency whatever to hysteria; the catamenia were regular, though scanty; during the period when the black matter was ejected from the stomach, bowels, and kidneys, there was a cessation of its secretion by the cutaneous exhalents of the forehead. Examination of the black matter from the face was made by Dr. Owen Rees, who reported it as composed of carbon, iron (in some unknown form of combination), lime, animal matter (albuminous), fatty matter, alkaline phosphate, and chloride. It was insoluble in water, it

yielded fatty matter to alcohol; the black colour was not changed by the action either of caustic potash or strong nitric acid. When moistened with distilled water it reddened litmus paper. Under the microscope was seen a confused mass, apparently made up of short hairs, epithelial scales, granules, and globules of fat. The black matter vomited was very acid; the carbon from the face was so finely divided that it burned with a vivid combustion, almost having the appearance of deflagration. Carbon, he continues, is certainly the colouring matter of this material (*op cit.*, p. 618). The lady became perfectly cured of this complaint. Dr. Neligan made a communication to the College of Physicians ten years ago on a "Peculiar Black Discoloration of the Skin of the Face" (*Dub, Quart. Jour.*, Vol. XIX., p. 293), which he had seen in a patient of Dr. Quinan's, and a drawing of whom I have in my hand. She was twenty-one years of age, the catamenia were suppressed; and after having for some time suffered from irritability of stomach and periodic vomiting, a dark bluish-black stain appeared at the inner canthus of the left eye, and soon both under eye-lids were discolored, the dark patches extending and becoming of a deeper colour at each catamenial period, the skin was so excessively tender at the seat of the discoloration that she could not bear the most gentle pressure with the finger on the parts, and she would not allow the removal of the colour by washing; the black discoloration subsequently extended very much over the face, engaging both cheeks to below the malar bones, and also the alæ of the nostrils. On examining the dark patches with a powerful lens, Dr. Neligan observed that the stain was dotted over the surface of the skin, the dots corresponding to the orifices of the sebaceous glands, and for this reason he approves of the term stearrhœa nigricans for this affection. He considered that, as not unfrequently occurs in females in whom the menstrual function is deranged, the secretion of the sebaceous glands becomes augmented in quantity, and that in these special cases it is further more altered by being stained with the colouring matter of the blood. Dr. Law suggested (*op. cit.*, p. 300) the name blepharo-melena, with reference to the case of a patient of his who suffered from a dark areola round the eyes, which subjected her to much persecution and annoyance when living as governess in the family of a homeopathic physician, who, notwithstanding the written testimony of Dr. Law and Sir H. Marsh to the genuineness of the phenomenon, persisted in accusing her of imposition and deceit. In the *Mémoires de l'Academie*

Impériale de Médecine (Tome XVII., XVIII., 1853–4) is a case of black coloration of the face observed by M. Bosquet, in the person of a married woman, heretofore in good health. Upon the subsidence of a violent paroxysmal cough she found her face gradually assuming a darker and darker colour, until it looked as if smeared with a "thick solution of indigo." The colour afterwards became still deeper, until her face resembled that of a negro under slight transpiration. By washing, the black layer could be removed, the skin then presenting a bluish-black colour, as the chin of a person having a strong black beard does after shaving. After a while small drops of black fluid appeared at the surface, and forming into a compact layer, gave the same appearance as before. Linen coming in contact with the face acquired stains that repeated washing only effaced. The colour, which had commenced towards the end of August, had quite disappeared by the middle of December, the only symptom noticed during its persistence was severe headache. With reference to this flux of facial pigment the question arises whether its appearance on the free surface of the skin is in accordance with the physical law of exosmosis, which the ordinary cutaneous secretion obeys, or whether it is the result of a capillary rupture; there are grounds for believing that the black, blue, or bluish-black colouring matter is a secretion from the capillary vessels of the skin, especially those of the sudoriparous glandular coil, because it is not observed that blood cells are present, or any structural constituent which would violate the integrity of the vascular membrane, and from the fact that in the cognate secretion, the urine, there is a recognized soluble principle, colourless at first, which can afterwards become blue or black, and then admits of precipitation and collection; there are also cases in which the dark pigment exists preformed in the blood, as in the cases of melanemia observed to accompany enlargement and pigmentous deposits in the spleen (Virchow, *Cell. Path.*, p. 222).

Laycock believes that the morbid pigment deposits proper, as distinguished from masses of altered blood corpuscles, are carbonaceous excretions, and are often vicarious with the suspension or imperfect elimination of other carbonaceous excretions—as the carbonic and lactic acids, and the pigment constituents of the urine and the bile; he properly draws a distinction between carbonaceous secretion and carbonaceous deposit, the examples of fixation of

carbon on the surface of the body are much more numerous than of its excretion as a dark pigment.

The secretion of colouring matter on the face is almost peculiar to females; in its commencement it is to be distinguished from the venous lividity of the lower eyelids observed during menstruation, and from the blueish hue derived from the circulation of imperfectly aërated blood. Its preference for the face, if not connected with the free and full exposure of that part of the body to light, heat, and air, great colour-developing agencies, may be referred to that law of selection which leads to the pigmentation of the mammary areola in pregnancy, or even in ovarian disease without pregnancy, and to the formation of the dusky abdominal streak observed under the same circumstances. These cutaneous pigmentations—the utero-ovarian melasma of Laycock—are so constant in pregnancy as to become diagnostic of that condition, but they are not confined always to the same part of the body. Montgomery[b] (p. 283) alludes to a lady of rank, who, when pregnant, was much annoyed by the appearance on her forehead and nose of two streaks, exactly resembling the marks that would be made by very dirty fingers drawn along these parts; another lady in her first pregnancy observed brownish spots on the sides of the forehead and temples, which she at first mistook for accidental soils on the skin; they remained permanent; further pregnancies made additions to them, so that at last she was obliged to dress her hair in a particular manner to conceal them. Le Cat and Camper have observed the face become quite black in pregnancy. Discoloration of the lower eyelid has been observed in men; Laycock (*Med. Ch. Rev.*, No. LIV., p. 467) remarks that this blepharal melasma, as he calls it, usually commences on the inner margin of the lower eyelid, and extends like a daub of Indian ink from thence to the middle of the lid; he observed it most commonly in men with dusky complexions, of enfeebled health, and nervously disposed; though it is not easy to see how far it is in relation with the genito-urinary system, he thinks it was so in the three or four cases he noticed. The actual transudation of the pigment from the blood vessels seems to be dependent upon conditions of the vaso-motor nerves; the generally symmetrical nature of the deposit, the absence of local disease of the skin, the great hyperesthesia of the seat of coloration, all point to lesions of the innervation of the integument, causing local

[b] Signs and Symptoms of Pregnancy.

determinations of blood and local variations of vascular action. Dr. Neligan has expressed his opinion that this colouring matter is derivable from hematin; Professor Laycock is in favour of its carbonaceous origin. In conclusion, I am anxious to direct attention to the connexion between many anomalous appearances of colour in various secretions and the formation of indigo compounds; from the facts that the coloured exudation on the skin has been in several cases blue all the time it continued, in others blue at first and becoming black, perhaps only from intensification of the original colour, that we are not acquainted with any blue form of carbon, and that there is a colourless substance normally present in the urine, from which indigo blue is produced by mere exposure to the air.

Art. VIII.—*Clinical Reports of Rare Cases, occurring in the Whitworth and Hardwicke Hospitals.* By Samuel Gordon, M.B., F.K. & Q.C.P.; Physician to the Hospitals, and Lecturer on the Practice of Medicine in the Carmichael School of Medicine.

(*Continued from Vol.* xxxiii., *page* 356.)

Most Extensive Pleuritic Effusion Rapidly Becoming Purulent; Paracentesis; Introduction of a Drainage Tube; Recovery; Examination of Interior of Pleura by the Endoscope.—I do not propose entering upon the history or details of the operation of *paracentesis thoracis* and the introduction of drainage tubes, but simply to record another case of recovery by this mode of treatment, and which has taken place under very adverse circumstances. I am induced to do so because I believe that this mode of treatment, originated by Dr. Goodfellow, of the Middlesex Hospital, has not met with sufficient favour on this side of the Channel.

In this city Professor Banks, Dr. Kidd, and myself have from time to time laid before the profession cases in which it has proved successful, and what is of more importance, cases whose recovery we would have despaired of if they had not been so treated.

It is not long since I had under my care a boy, about fourteen years of age, son of a physician of considerable repute in his own district. This boy upon recovering from a very severe attack of malignant scarlatina, was seized with acute pleuritic inflammation of the left side, with effusion of purulent matter to a large amount;

the case presented all the usual phenomena of a large empyema of necessity, and pointed between the third and fourth costal cartilages, and very close to the sternum. The external abscess was opened, and over a pint of purulent matter escaped; from day to day a large quantity was still drawn off by changing the patient's posture, making him cough, &c., &c.; but it was distressing to find how these same exertions, so exhausting to the patient's strength, had to be continually employed to check the accumulation of the fluid. Under these circumstances, I proposed to his father to introduce the drainage tube, in the way proposed in these papers to which I have alluded to; but he did not consider that that operation had been shown to be so advantageous as to warrant his submitting his child to a second incision into the pleura, an operation which he looked upon as in many ways most hazardous.

The boy gradually sunk from an exhausting purulent secretion, which was retained within the system. In my opinion, had the operation been performed he would, in all human probability, have made a good recovery.

I look back on this case with regret, and I have to look back with a similar feeling on some others, which I can but too well remember, and which had a similar termination, but which I believe would have had a far different ending had this means of relief been at that time known to us. Impressed with this feeling, I wish to record the following case, which I think testifies in a remarkable manner to the value of this mode of treatment.

Anastatia Baily, a very delicate-looking little girl, eleven years of age, was admitted into the Whitworth Hospital on the 27th of April last, under circumstances of urgent respiratory distress.

The *history* which her mother, who carried her into hospital, gave of her illness was, that she was always a healthy child until about two months ago, when, for the first time, she began to complain, principally of a more or less constant pain of the left side and a slight catching cough. The cough had of late become much more severe; but the urgent symptoms under which she now labours did not attack her until about a week ago, when the pain and stitch in her side became much augmented, and when she became attacked with gradually increasing oppression of her breathing. She has had no definite rigor, though she has often complained of chills. She had been in bed for ten days previous to admission. No history of family scrofulous taint could be made out.

After admission, when examined as she lay in bed, it was observed that the decubitus was diagonal, midway between dorsal and that on the left side; the respiration was obviously much laboured and hurried—68 per minute; pulse 140, and very weak; she made much complaint of pain, tenderness, and stitch in the lower part of the left side; cried out much on being moved or asked to move, and became much more oppressed when raised into the sitting posture or made to lie on the right side.

The *physical signs* were those of left pleural effusion in a very exaggerated degree. The displacement of the heart immediately attracted attention; its apex plainly pulsated an inch to the *right* of the margin of the sternum, and half an inch *higher* than the nipple. On percussion the whole left side of the chest was absolutely dull from top to base; the dulness, moreover, encroaching on the other side beyond the right margin of the sternum, and the spines of the vertebræ being quite dull behind. The left side looked much dilated, and measurement at the level of the nipples showed it to exceed the circumference of the right by three-quarters of an inch; it presented both to the eye and hand a perfectly smooth surface, and the natural depression of the supra-clavicular fossa was quite filled up.

To the dull region corresponded absence of all respiratory or vocal sound, except over the upper part of the sternum, and in the left infra-scapular region, in which parts bronchial breathing existed. The breathing over the right lung was intensely puerile. Some enlarged superficial veins were observed traversing the front of the left side.

The remedial means adopted, which consisted in the application of two leeches to the side, and covering it with a light warm poultice, and the exhibition of small doses of mercury and opium internally frequently repeated, failed completely in promoting the absorption of the effused fluid; on the contrary, it appeared to have increased, and on the following morning the dyspnea had become much more urgent and decided evidences of insufficient aëration of the blood existed. The face and surface generally were somewhat livid; her strength was evidently sinking, and she complained more than ever of her side. Pulse 144; respiration 66.

The operation of thoracic paracentesis was performed on the 29th of April. The puncture being made between the third and fourth ribs, at a point near the sternum, where the integument was thinned, and where there was a decided impulse on coughing. Exactly a

quart of clear greenish-yellow serum was drawn off. I used Bowditch's syringe on this occasion; but despite all precaution, a considerable quantity of air entered the pleural cavity. During and after the operation the lung appeared to make a slight effort to expand; feeble respiratory murmur became audible behind and above, but not in front. The heart decidedly moved much towards the left, and immediately after the operation had nearly gained the region of the ensiform cartilage. The wound was immediately closed with adhesive plaster.

Two hours after the operation.—The patient had slept quietly since the operation, and her respiration had become greatly relieved. Pulse 128; respiration, 44. No examination of the chest made.

In the evening the pulse had risen to 136 and the respiration to 52. A tympanitic condition of the upper part of the left side showed that a corresponding portion of the pleura was occupied by air. The heart had returned to the position it occupied before the operation.

April 30.—Has been very restless and did not sleep last night. Pulse, 140; respiration, 68.

May 2.—Her weakness is extreme, and her dyspnea most urgent; her alæ nasi widely dilated, and her pulse scarcely perceptible. Symptoms of accumulation have gradually progressed, and to-day the symptoms of pulmonary oppression were as marked as on her admission. Her lips were blue; her pupils dilated; the heart was even more displaced than at first, being now close under the right clavicle. Pulse, 144; respiration, 72.

The chest was again tapped in the same situation; but when I found that purulent matter was escaping through the canula, I withdrew it, and closed the wound, and looked for the most depending spot in which I could safely open the pleura—the heart being under the right clavicle and the diaphragm convex downwards, I had not much difficulty in finding and opening the intercostal space. Twenty-eight ounces of purulent matter were drawn off; a *drainage tube* was then introduced through the canula, and left in the chest; the canula being withdrawn.

By this second operation she was much relieved, though not to the same amount as on the first occasion. She appeared to have less vigour of reaction than before; and she was obliged to be supported by large quantities of wine.

Three hours after the operation.—She slept after a small opiate.

Pulse, 140; respiration, 56. There is but a very trifling discharge through the tube. The air freely plays in and out of the pleura through the orifice during each act of respiration. The heart has not in the least returned from its abnormal situation.

May 4.—Pulse, 126; respiration, 52. Discharge from the tube very trifling. She is so weak as to require a large glass of wine every hour.

10th.—Since last report the purulent discharge has greatly increased. The patient has much deteriorated in aspect; she is now very delicate and *hectic*-looking, and seems to have wasted considerably. She sleeps constantly. She is taking bark, and chlorate of potass, and large quantities of wine. The measurement of the two sides makes them about equal.

17th.—Still looking extremely delicate and hectic. Copious and very fetid discharge flows constantly through the tube; a large quantity (about five ounces) came away to-day upon the removal of the old and introduction of a new tube. The pulse has remained high, varying from 120 to 132 For the last few days she has been ordered cod-liver oil, but she obstinately refuses to drink it, because it invariably makes her sick, even in very small doses, and at very long intervals. I therefore substituted for it fresh mutton suet, dissolved in boiling milk, as much as could be taken up, and of this she drank freely day and night, taking at least two quarts of the milk so saturated in the twenty-four hours. She had some tendency to diarrhea, which was generally checked by small doses of the pernitrate of iron; she still required eight ounces of port wine daily, and occasionally some syrup of bark. This treatment was continued for two months, and on the 21*st of July*, on my return after some weeks' absence, I was agreeably surprised to find her wonderfully improved in every respect. She was able to be up every day. She had become quite bright and healthy looking. The left side had become wonderfully contracted; the shoulder depressed—a marked depression corresponding to the left infra-clavicular region. The diaphragm had now returned to its normal position. The right side, on the contrary, had become much expanded, and moved exaggeratedly during respiration.

A remarkable system of large subcutaneous blue veins had become developed over the front of the chest, more especially on the left side. The heart was still under the right clavicle; a small quantity of pus escaped daily through the tube.

During the next two months there were occasional relapses

of diarrhea and of mild attacks of bronchitis of the right lung, but she was seldom confined to bed for two consecutive days, and her general health progressed favourably. The left side of the chest was gradually contracting and the right enlarging. On the 1st of October there was a difference of two inches by measurement at the level of the nipple, and the antero-posterior diameter showed a difference of two and a quarter inches. There still existed a most remarkable net-work of large superficial veins over the upper part of the sternum and left side of the thorax; at this time the contraction of the left side of the chest appears to have been at its maximum, and the child's general health being greatly improved, the hitherto contracting side from this time began to enlarge.

From this time her progress has been almost uninterrupted. On the 15th December, the smallest sized tube was introduced, and was finally withdrawn on the 13th of January. The fistulous orifice remains, and occasionally a drop of thin pus exudes from it. The sternum is bent obliquely downwards, and to the right side, the manubrium being drawn over to the left side. The infra-clavicular space is still much depressed; but, excepting this portion, the left side has fully expanded, and the intercostal spaces have again assumed their normal width. The varicose veins have almost disappeared from the front of the chest, and the heart has moved downwards, and towards the left side, being under the sternum, but not having yet passed its left border.

This case was evidently from the beginning one of very acute inflammation of the pleura, and urgently requiring thoracentesis. The fluid evacuated being serum, the wound was, of course, in the first instance, carefully closed. The extreme rapidity with which the change from serous to purulent fluid occurred is worthy of observation; it prevented one entertaining any well-grounded hope that there would not be a further re-accumulation; the opening was, therefore, in a most unfavourable situation for the constant evacuation of accumulating fluid; and I considered that there were only two plans which could be followed—either to complete the evacuation as far as possible through the opening now made, and subsequently to introduce a drainage tube, with a counter opening lower down, according to Dr. Goodfellow's plan—or, as I did, to close the original opening, and at once introduce a tube at the very lowest part of the pleura. By the latter proceeding I avoided having two pleural fistulæ where one would suffice, and at the same time effectually prevented any accumulation of pus in the

pleura. To this curative means, which the drainage tube so effectually accomplished, this patient's recovery, in my opinion, is principally owing. The case proves, also, that one insertion of a tube is sufficient, provided it be sufficiently depending, and that, therefore, Dr. Goodfellow's plan may be so far modified that, when it becomes necessary to make a second opening lower down, the upper orifice may be allowed to heal.

I never experienced any difficulty in keeping the tube in the chest, or in re-introducing it when I deemed it necessary to change it. Although these are the two principal facts to be learned from this case—1st, the advisability of treating empyema by means of drainage tubing; and, secondly, that the insertion of the tube through one depending opening is sufficient under ordinary circumstances. There are other circumstances in this case deserving of some attention.

I have seldom seen a case in which the administration of cod-liver oil seemed more clearly indicated; but, besides that the patient seemed to have a natural repugnance to it, the stomach always rejected it, even in the smallest quantity, we were, therefore, reluctantly obliged to abandon it, but fortunately were able to find an admirable substitute for it in the mutton suet, and I can confidently recommend its use in similar cases.

The enlarged and varicose condition of the veins in parts of the chest was for a long time very remarkable. I have seldom seen them more enlarged in cases of aneurism or extensive malignant disease. I considered that they were caused by the lymph which had been effused undergoing the usual process of contraction, and that this had extended to the subserous structures, and so involved the internal mammary veins and others, passing up to the left innominata, and probably a portion of this trunk itself; afterwards, when the side began to expand and the ribs again to separate, this superficial venous distention gradually diminished, and has now almost entirely disappeared.

This gradual enlargement of the diseased and contracted side is perhaps one of the most remarkable and important features in the case, and should never be lost sight of in the prognosis of empyema. We have proof here, how even when the side is reduced almost to a minimum, the process of expansion may again take place, and the lung be restored to a useful and comparatively healthy condition.

The permanent dislocation of the heart is another feature of interest. It is now pushed slightly downwards and inwards from

the place which it occupied beneath the right clavicle; owing, I believe, to a mechanical pressure on it from the enlarging right lung; but I think it probable that on account of the amount of adhesion which has probably taken place in the pleura, immediately adjoining the mediastinum, that the heart will never resume its normal position in this patient.

Another very interesting point in this case is, that although there is no sign of phthisical development, yet the hand is as good an example of what is termed the clubbed fingers as can often be seen. I believe myself that this condition is as often, if not more often, associated with chronic pleurisy than with chronic phthisis.

This case is also very remarkable as being the first in which an examination of the interior of the chest has been made by the endoscope. The facts which we satisfied ourselves of were that the lung was not compressed towards the spine, nor much reduced in size; that is that there was no large vacant pleural cavity, and that whenever we saw the pleura it presented more or less a granular surface, and no appearance of lymph.

To ascertain the condition of a lung in a case where a pleural fistula exists can never be a very easy matter, an endoscopic examination may in such cases, therefore, be most valuable—that it is perfectly practicable this case proves.

I am indebted to Dr. Cruise for making the examination. It was the first occasion upon which he had used the binocular adjustment, which renders the instrument so much more perfect.

Case II.—*Case of Reno-Pulmonary Fistula—Ulceration of the Duodenum.*—Mary Healy, aged twenty-four was admitted into the Whitworth Hospital on the 18th of January, 1865, labouring under well-marked symptoms of hectic fever. She had profuse night perspirations, profuse purulent expectoration, and diarrhea, and during her stay in hospital she daily passed large quantities of purulent urine.

The history which she gave of her illness was, that she had been for a long time subject to what she termed "gravel;" for these symptoms of urinary distress she had never received any beneficial treatment, and they were of about twelve months' duration; that during all this time her health was gradually declining, her appetite failing, and emaciation rapidly progressing. Within the last three months she has suffered from severe cough, which has distressed her more than all her other ailments; it is so incessant, and adds so

much to the urinary distress, as to cause almost constant stillicidium.

She was excessively pale, anemic, and slightly anasarcous universally; her voice was excessively feeble. She had no vomiting, but a dislike to all kinds of food; and she was altogether very like a person in the last stage of pulmonary consumption; but on examining her chest there was no evidence of extensive disease in the upper part of either lung; in fact there was no sign of organic disease in any part of the left lung, but in the inferior portion of the right lung there existed the usual evidences of a pulmonic abscess; and from the extent of the dulness, and the intensity of the gargouillement and pectoriloquy, it was inferred that either the abscess was very extensive, or that it was surrounded by a large portion of solid lung. During her stay in hospital there was no important change in her symptoms. From the time of her admission she complained greatly of pain in her right side, and over all the right hypochondriac and lumbar regions there was great diffused swelling, and tenderness on pressure; it also gave her much pain to move, and her constant position was on her back, inclined to her right side. She was kept alive by wine whey, and other light nutriment, and the severity of the cough was somewhat abated, when, on the 8th of February, there was observed a decidedly gangrenous fetor from her breath and from the expectoration. Although this peculiar symptom is by no means diagnostic of gangrene of the lung in ordinary cases, still, when it supervenes in cases where the existence of a pulmonary abscess has been previously recognized, we need not hesitate to assert that the walls of the abscess have taken on a gangrenous action. In the present case there could not have been any hesitation in the diagnosis; for, in addition to the peculiar fetor, there was a suddden sinking and collapse of her already emaciated frame, and from this she never rallied. She continued to sink, and died on the 12th of February.

Autopsy (*nine hours after death*).—On removing the lungs from the chest, some old adhesions on both sides had to be overcome. Those on the left side were few, and easily broken down. On the right side they were in parts very firm, especially those which bound the apex of the lung to the cone of the pleura; the postero-inferior portion of the lung was bound to the thoracic parietes and to the diaphragm by a thick false membrane at least one-fourth of an inch in thickness. When this was stripped off from the lung, it was found to have bounded, inferiorly, a superficial cavity in the lung,

of very irregular shape, and containing probably about four ounces of offensive greyish fluid, and having the usual aspect of chronic pulmonary excavations, crossed by the ligamentous remains of blood vessels, and with several tolerably-sized bronchi gaping into it; its surface was very uneven. The portions of lung tissue bounding this cavity superiorly and laterally were, for a considerable space around it, solidified, and sank in water; there was no trace of disease, tubercular or otherwise, in any part of the remainder of that or of the opposite lung.

The heart appeared to be of normal size, and of perfectly healthy structure.

Abdomen.—The liver was of healthy appearance, but was found to have contracted adhesions to the surrounding parts, as follows :— A small oval ulcer in the commencement of the duodenum had perforated through all the coats of that viscus, and ulcerated its way for a certain distance into the substance of the liver, at the lower edge of the quadrate lobe, forming a small oval depression in that part; the adhesion of the liver to the duodenum in this part was very slight, giving way without the least resistance. The adhesion of the upper edge to the diaphragm was very intimate; on endeavouring to separate the inferior surface of the right lobe from the parts beneath, the sac of an abscess was opened into, which further dissection showed to be one in connexion with, but external to, the right kidney; the cyst of this abscess was, to some extent, formed by a thickened layer of the capsule of the kidney; its boundaries and extent were as follows:—It commenced in the right renal region, and completely enveloped the kidney; it was here bounded on all sides by the distended capsule; it passed directly upwards behind the right lobe of the liver, which formed its anterior boundary, and was itself tilted forwards; the posterior and external boundary was now formed by the diaphragm, pushed upwards to an extraordinary degree; and the cone of the abscess was formed by a remarkably thick deposit of lymph, but which corresponded accurately to a spot on the inferior surface of the diaphragm, which was remarkably thin and depressed, and this depression again corresponded to, and by its superior surface formed the centre of the base of the pulmonary abscess; at this spot the diaphragm was on the point of giving way, but as yet there was no complete solution of continuity.

The intestines were removed with the stomach. The latter organ was of enormous dimensions, but otherwise presented nothing

abnormal. Two ulcers existed in the duodenum, immediately beyond the pylorus. On its anterior aspect was the one already noticed as having penetrated the quadrate lobe of the liver; it was somewhat larger than a shilling. The other, of about the same size, was at exactly the same level, and towards the inner and posterior part of the intestine. It was of exactly the same character, and had perforated the intestine, and penetrated the substance of the head of the pancreas, to which the duodenum was intimately adherent. The edges of both these ulcers were raised and thickened, and hard, almost cartilaginous in feel; they were both plugged with coagulated blood. No other abnormal appearance could be detected in the intestines.

The right kidney appeared to be of enormous size. Its inferior edge extended to a distance of an inch and a half below the crest of the ilium. The abscess connected with its capsule has been already described; it was capable of containing, probably, about twelve ounces of fluid. After this abscess was completely emptied, the kidney remained of immense size, and presented to the touch a distinct feeling of fluctuation; and when the ureter was cut across, a quantity of purulent matter flowed out of it. The kidney was removed, and an incision made into it along its convex border, from which a quantity of pus escaped, and along with the pus a small loose calculus, of peculiar shape. It was round, with a great number of spiculæ projecting from it. Its general surface was of a dirty whitish colour, but the points of the spiculæ were of a dark brown, *i.e.*, the whitish investment was deficient there. Another calculus was felt, imbedded deep down in the pelvis of the kidney, and had to be dissected out, as it was very tightly impacted; it was of large size. Its general shape looked as if it had been moulded to one of the renal infundibula; its surface generally was of a dark brown colour, rough, and with small tubercles over it; in one or two places, where it was broken, it was white.

The structure of the kidney had undergone important and extensive changes. Hardly any trace of its glandular structure existed, and indeed it seemed to exist merely as a thick sort of capsule, enclosing the pus which was contained in its enormously enlarged pelvis. Its appearance when cut into was peculiar; the lining membrane was white, smooth, and thickened; and it presented numerous complicated inequalities, depressions, and elevations.

The left kidney was of large size, but of healthy appearance on section.

The urine in the bladder contained pus in copious quantity.

It is not difficult in this case to trace the progress of the disease. The formation of the renal calculus, and obstruction thereby to the discharge of the urine, was evidently the first step in this vast amount of suppuration. By degrees the entire renal structure was destroyed, partly by the pressure of the distended calyces and pelvis, and partly from disease of the secreting portions. The decomposed urine and the irritation of the calculi induced a process of suppuration, which eventually took the place of the renal structure, and distended the investing wall of the kidney to an enormous extent. How it could have borne such a degree of distention without rupture seems marvellous; it appears to have relieved itself in two ways—first, by the suppuration having ulcerated a passage around the large calculus into the ureter; and, secondly, by the process of endosmosis, by which the renal capsule was to such a degree detached, and so large a secondary abscess was formed, filling the entire right side of the abdomen. We have next to observe the efforts made for the discharge of this vast purulent collection. It appears to me that abscesses connected with the kidney attain a larger size than any other internal purulent collection, excepting perhaps empyema. The quantity of matter in the present case exceeded four pints; and we read, in Monneret and Fleury's admirable compendium, of abscesses of this kind enclosing fourteen pints of pus: they quote also Ballotta's almost incredible case, in which the left kidney presented a circumference of four feet; and the contents of the abscess in and around it—pus, blood, and calculi—measured sixty-eight pints.

We find in this case very clearly established the mode in which a reno-bronchial fistula takes place. It is more than probable that in all such cases the perforation of the diaphragm is the last thing to occur: the details of these cases (there are several recorded) give the history, first of the renal abscess, then of pulmonary disease; and, after that, the sudden expectoration of purulent matter, with a marked diminution of the quantity passed *per urethram*.

It is very remarkable in the present instance that the disease has occurred on the right side. Cruveilhier thinks its occurrence on this side impossible, on account of the presence of the liver; certainly Rayer's case is by no means satisfactory; but Sposer records[a] a case which puts the possibility of its occurrence beyond doubt; and the

[a] *Vide* Journ. des Conn. Med. Chir., 1840, p. 122.

present case both proves its possibility, and shows the mode of its occurrence.

The ulceration found in the duodenum at once pronounces the disease there to have been of a chronic character. It was not marked by any symptoms during life except the whiteness of the alvine discharges, and the existence of fatty matters in the stools; these were at the time, however, referred to the hepatic disease.

There are two ways of viewing this ulceration—first, from its contiguity to the large abscess, it might be considered that the pus which had already gained an entrance into the liver was endeavouring to effect a passage also into the intestine. Rayer describes and depicts a very remarkable case of reno-duodenal fistula; and, if there were but the one duodenal ulcer, that connected with the liver, this would probably be the more acceptable explanation; but the direct connexion of the second ulcer with the pancreas would require, at all events, some additional interpretation; we must therefore consider the duodenal ulceration as being altogether a distinct disease, and perhaps even the primary affection; and that the non-assimilation of food caused thereby was the cause more or less directly of the formation of the renal calculi, which eventually caused the death of this patient.

The calculi consist principally of lithic acid, with oxalate of lime.—(Museum, Carmichael School).

Case III.—*Case of Hypertrophy of the Heart from Renal Disease—Mitral Regurgitation independent of Mitral Valve Disease.*—A man about forty years of age was admitted into No. 5 ward, Whitworth Hospital, in February last, suffering from symptoms of renal dropsy; there was also observed at this time a *bruit de soufflet* at the apex of the heart, synchronous with the first sound; and inasmuch as he also suffered from some pulmonary congestion, he was supposed to have disease of the mitral opening. In this diagnosis we were confirmed by the apparently increased impulse of the right ventricle, and the abnormal clearness of its sound. He had a considerable amount of anasarca, and the symptoms of pulmonary distress were also severe; but from both he obtained gradual and decided relief; and after some time he, at his own request, quitted the hospital. He remained out for some time, but returned, labouring under pericardial effusion to an enormous amount, and having also an effusion of fluid into the left pleura. The pericardial effusion was diagnosed principally by the fact, that during his long

previous stay in hospital the sounds of the heart and the impulse were always peculiarly loud and strong, but now there was no impulse whatever, even from a heart which, as shown by the *post mortem* examination, was very greatly hypertrophied. From this pericardial effusion, however, the patient recovered to a very great extent; so much so, that on the *autopsy* there was only a very small quantity of fluid found in the cavity of the pericardium. Before his death the impulse of the heart, and the sounds which had been inaudible, had returned. He died with a very great effusion into the left pleura; the left lung exhibited the carnified condition of a lung long subjected to pressure, with one or two spots of old pulmonary apoplexy, from which he had before suffered, but which were now forcibly compressed. A quantity of soft lymph was deposited over various parts of the heart's surface; but during life the fluid effusion was never absorbed to such an amount as to allow of pericardial frottement being audible. The heart and other viscera were submitted to the Pathological Society on the 8th of April last.

The principal point of interest in the morbid anatomy of this case is the condition of the left ventricle of the heart. The diagnosis during life was, that it was a case of permanent patency of the left auriculo-ventricular opening; it was not considered to be a case of much narrowing of the opening, because the pulse was never intermitting nor remitting, and was always perceptible at the wrist; there was a loud *bruit de soufflet* at the apex of the heart, not audible at the base, at least not more so than could fairly be attributed to the sound which originated at the mitral opening; this opening, it was evident from the *post mortem* examination, was not in its perfectly normal condition; the valve was very slightly thickened, but there was no puckering nor contraction of its substance; still the edges did not meet, and there had evidently been a regurgitation of blood into the left auricle. The condition of the heart, as shown by the autopsy, was not what we would expect to find if the diagnosis were correct, that the primary disease was insufficiency of the mitral valve; it was rather the condition which we usually find connected with long-continued patency of the aortic opening. It was, in fact, a well-marked example of hypertrophy, chiefly of the left ventricle of the heart. The weight of the heart was increased to thirteen ounces; the left ventricle was elongated, and its walls were nearly an inch and a-half in thickness. At first I was inclined to think that there must have been some

regurgitation from the aorta into the ventricle, but which, from some peculiar cause, was not evidenced during life. Before slitting down the aorta, we put it under a pipe to test the valves, and found the water was perfectly retained; there was, therefore, no insufficiency of the aortic valves; and, on looking at the ventricular surface, we found that the valves met accurately; there was no thickening of them, and the aorta also was sound. We must, therefore, look elsewhere to account for the greatly hypertrophied condition of the left ventricle; it certainly was not produced by aortic disease, nor is it the condition of ventricle which arises from permanent patency of the mitral opening. We are, therefore, driven to find the cause of it in the condition of the kidneys, which we find affected with extreme obstructive disease. I believe it was the first occasion upon which this consequence of obstructive renal disease was demonstrated to the Pathological Society. The idea, however, as to their intimate connexion is by no means novel. Latham, in the year 1846, wrote:—"So, too, of the heart. It will palpitate without apparent cause inherent in itself; it will undergo organic unsoundness, still without cause belonging to itself or to other parts, save what can be inferred from the presence of albuminous urine." I have long thought that one of the most common causes of hypertrophy of the wall of the left ventricle is renal disease. The principal immediate cause of this ventricular hypertrophy is to be found in the obstruction to the capillary circulation produced by the diseased condition of the blood. Dr. Basham, in his late Croonian Lectures, makes the following very clear statement as to this condition:—"It is now generally admitted that in the so-called blood diseases the capillary circulation becomes impeded; so that, whenever the blood is charged with morbid material, or is in any way rendered unfit for the processes of nutrition or secretion, a stagnation or imperfect movement through the capillaries becomes manifest, not only by obvious deviations in the integrity of the functions of the tissue or organ, but especially by the increased frequency of the heart's action, and the laborious efforts made by that organ to force the blood through the sluggish and congested vessels." Nor is it the *materies morbi renalis* alone which would thus affect the heart. Cruveilhier "has more than once observed that chlorotic or anemic palpitations have induced a hypertrophy of the heart, which has survived the cure of the anemia or chlorosis"—thus proving that it had its origin, not merely in deranged nervous action, but in the obstructed condition of the capillary circulation: for "blood [I

quote again from Dr. Basham] with these qualities appears to pass with difficulty through the capillaries, principally on account of the increased number of the colourless cells, which, larger in size than the red corpuscles, exhibit a remarkable tenacity for adhesion to the walls of the vessels." In this patient the kidneys were of extremely small size; there must, therefore, have been considerable obstruction to the passage of the blood into the renal arteries; and when we remember how large their supply is, we can understand how their obstruction would be another cause for increased action in, and therefore hypertrophy of, the left ventricle of the heart. Such cases as the above are to be carefully distinguished from those of organic disease of the heart, in which albuminuria occurs as rather a late symptom.

It remains only to explain the condition of the mitral valve in this case. The situation and persistence of the endocardial murmur during life, combined with the want of proportion between the impulse of the heart and the radial pulse, induced the diagnosis of mitral regurgitation; this want of proportion between the impulse of the heart and the radial pulse is usually ascribed to the impulse of the heart, being in such cases chiefly produced by an hypertrophied right ventricle, and perhaps in narrowing of the mitral orifice it always is so; but in the present instance an hypertrophied left ventricle, sending back a great part of its contents into the left auricle, was mistaken for hypertrophy of the right. The possibility of such an error is recognised by all writers on cardiac pathology since Laennec, who says:—"The *left ventricle* being more prone to thickness, and not less to dilatation than the right, sometimes attains a volume seldom or never acquired by the right; and when its enlargement is enormous, it occupies not only the left precordial region, but extends far under the sternum, where its impulse and sound may be mistaken for those of the right ventricle."

We are familiar with the fact, that regurgitation from the aorta into the left ventricle is perfectly consistent with a healthy condition of the aortic valves The present case demonstrated the same fact as to the mitral valve. In the former case the valvular insufficiency is caused by a forcible drawing back of the basis of the aortic valves by a widened aorta; in the latter, the abnormal action is also exercised upon the attached extremities of the mitral valve by a widened left ventricle, which has also undergone other important changes. For this addition to cardiac pathology, I believe we are indebted to Dr. Gairdner, now of Glasgow, who

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ON THE OPERATIONS OF LITHOTRITY AND LITHOTOMY.

demonstrated its mode of occurrence to the physiological section of the British Association in Dublin, in 1857.[a] Dr. Gairdner's attention was first drawn to the point by meeting with cases like the present, "in which indications appeared, during the life of the patient, of regurgitation through the mitral orifice, but in which afterwards the valves appeared by no means insufficient." That this condition of the left ventricle is capable of producing a mitral murmur is indubitable; and it will, I think, explain fully the nature of many cases in which the endocardial murmur audible at the apex of the heart has hitherto been considered to be merely functional.

Art. IX.—*Cases of Lithotrity and of Lithotomy, with Remarks.* By Christopher Fleming, M.D., M.R.I.A.; Surgeon to the Richmond Hospital; Visiting Surgeon to Steevens' Hospital; Lecturer on Clinical Surgery; Member of Council of the Surgical and Pathological Societies; Examiner on Surgery, Royal Coll. Surgeons, Ireland; Foreign Corresponding Member of the Society of Surgeons, Paris, &c.

The presence of stone in the bladder always excites in the mind of the surgeon more or less of anxiety, not lessened by the consideration of the several expedients which may be required for its cure. That the disease is often to be met with must be admitted, if we place in the category the numerous cases of urinary calculi which spontaneously escape through the urethra, or the many calculi which are being easily removed from or through it; but if we limit our remarks to those hospital cases alone, which demand the operation of lithotrity, or that of lithotomy, the comparative unfrequency of the disease in this city, and, I may add, in the several provincial towns of Ireland, cannot be questioned.[b] Such cases

[a] See Dublin Hospital Gazette, October 1, 1857.

[b] The irregularity with which cases of stone in the bladder appear in our hospitals in Ireland, cannot fail to have attracted attention, and it may not be inapposite to remark, both in reference to the unfrequency and irregularity of their occurrence, that nearly a century ago (1779), Mr. Dease, one of the ablest surgeons and most successful lithotomists which this city, or perhaps any country, ever produced, makes the statement, when writing on the subject of lithotomy, that in so large a city as Dublin, then containing a population of 200,000 souls, there had not been one operation for stone, for nearly two years, and that for four years subsequently there were only three cases cut for stone—and moreover, that the aggregate number of the cases cut in the course of ten years in all the hospitals then in Dublin, was only twenty-eight,

rank amongst the most important to be encountered in operative surgery, and hence a history somewhat in detail, of the progress and results of the respective operations which have been performed, possesses more than ordinary practical interest. The following cases, and the accompanying illustrations, are taken from a series of *Clinical Records of Injuries and Diseases of the Urinary Organs*, now passing through the press,[a] and are selected as well on account of the satisfactory results of the treatment adopted, especially in the cases of lithotrity, as of the presence of some peculiarities in their attendant symptoms. An additional value may, perhaps, be attached to them from the fact, that after a lengthened interval, the subject of each case is at present free from any symptoms of his former ailments. The old man who underwent the operation of lithotomy was in hospital some few months back with an attack of acute ophthalmia, and he had then no urinary complaint.

Explanation of Plate.

Figs. 1, 2, and 3.—Portions of fragmentary detritus of natural size and shape, occurring in Cases I., II., III. Small isolated calculus at upper margin of Fig. 1.

Fig. 4.—Six calculi of natural size and shape, removed at single operation of lithotomy—one of the calculi being broken to exhibit its internal structure, and colour.

Chemical Composition of the above.

Analysis by T. W. Grimshaw, M.B.

Fig. 1.—Dark portion, oxalate of lime; white portion, ammoniaco-magnesian-phosphate.

Fig. 2.—Oxalate of lime, with a slight outer incrustation of ammoniaco-magnesian-phosphate.

Fig. 3.—Lithic acid, and lithate of ammonia.

Fig. 4.—Lithic acid, and lithate of ammonia.

ten of which cases were successfully operated on by himself. Our statistics on this subject are both incomplete and unsatisfactory. I believe, however, I would exaggerate if I stated that the average *annual* number of cases of stone operated upon throughout Ireland in our several hospitals or infirmaries has exceeded twelve, even since the period alluded to.

[a] The delay in the publication of the above work is attributable to causes over which I have not had control. The several plates have now been completed, and many of them have been long since shown at the Pathological Society, at my clinical lectures, and also to many friends. Any claim to originality in their delineations is of comparatively minor importance to me—at the same time it has been deemed only just to myself to attach a special notification to each plate.

Case I.—*Stone in the Bladder; Deceptive Sensible Signs of its Presence, and Discovery of, by the Lithotrite; Characters of the Urine; Operation of Lithotrity; Sudden and Violent Hematuria; Peculiarities and Nature of Detritus; Permanent Cure.*—A man, aged between fifty and fifty-five years, a carpenter by trade, applied at hospital, with much urinary distress, supposed to be attributable to protracted prostatic disease, the symptoms of which had existed for more than two years. His appearance indicated good bodily health. The irritability of his bladder was very great; the pain he suffered was considerable, and was most intense when the last drops of urine were being discharged. He especially complained of a constant uneasiness in the fore part of the penis, with a scalding sensation in the urethra, which obliged him almost incessantly to squeeze and compress the organ. He stated that there was often a sudden stoppage to the flow of the urine, when his paroxysms of pain became particularly severe, and that they were equally so on any rough movements, in walking or in driving. All pain was limited to the region of the bladder and rectum; there was occasional tenesmus; there was no lumbar uneasiness. The condition of his urine attracted his attention—it was muddy and slimy, and had a heavy disagreeable odour; it was passed at short and irregular intervals, in very small quantities, but reached an average amount daily. He mentioned that he had been repeatedly sounded for stone, and that none could be detected. I admitted him into the hospital in October, 1855.

After rest and suitable treatment, the bladder was examined, and notwithstanding the adoption of every expedient, I failed to find any satisfactory evidence of the presence of stone. There was a solid, dull sensation communicated on moving the sound in the bladder, but not more than could be referred to the condition of the prostate gland, which was felt through the rectum, much enlarged. The character of the urine at this time little varied; it was usually alkaline, or very faintly acid; had a density of 1025 or so; its colour was turbid, its odour fetid, and its deposit viscid and tenacious. Any irritation produced by the examination of the bladder subsided, and the character of the urine, after a few days, improved. I now introduced an ordinary screw flat-bladed lithotrite in place of a sound, and not having felt any sensation of the presence of a stone, I gently opened the blades of the lithotrite, and instantaneously caught a stone measuring on the scale, about one

inch or so.[a] The same dull sensation was communicated by the grasp of the stone as at the previous sounding. This examination produced comparatively little irritation; the bladder was afterwards less intolerant of urine; neither was it so of the presence of sound or catheter—on the contrary, the irritability was rather diminished; moreover, the condition of the urine was materially improved, particularly from the daily washing out of the bladder with tepid water; its colour, its reaction and odour, and its deposit, were specially improved. On examining the latter under the microscope, in addition to triple phosphate crystals, usual under such circumstances, numerous minute crystals of oxalate of lime were visible, intermixed with spherical masses of urate of soda, having projecting acicular crystals of uric acid attached to them.[b] All these circumstances being taken into consideration, with the size of the calculus, the good bodily health of the man, and his remarkably placid disposition, I decided upon the selection of the operation of lithotrity.

17th October.—This morning (10, a.m.) I proceeded in the ordinary way to the operation of lithotrity on Heurteloup's bed, drawing off the urine in the bladder, injecting it with tepid water to the amount of about six ounces, and then introducing Weiss's screw fenestrated lithotrite—No. 14 in the blades, and about 13 inches the shaft. The instrument was rather large for the urethra, and did not work freely. However, I caught the stone, and had three distinct crushings without removing the lithotrite. There was no perceptible grating sensation communicated during the crushing; but that the stone was broken was evident, not alone from the presence of detritus on the lithotrite, but also from the presence of fragments which escaped through the steel evacuating catheter, and others which afterwards, on its removal, passed immediately with the urine. The man was placed in his bed, between warm blankets, and had a tumbler of hot negus. The amount of suffering experienced was so much greater than I expected, that I regretted I did not use chloroform, and yet I was disposed to attribute much to the large size of the lithotrite, which did not allow of its free sliding movement in the urethra.

[a] In the eighteenth volume of this Journal there are some remarks of mine, accompanied with the woodcut of a sound and lithometer suited to the child. I have used the same form, of the requisite size and shape, for the adult, with much advantage.

[b] Attention to the presence of those spherical masses of urate of ammonia (or soda, as named by some), with acicular uric acid crystals, in certain urinary deposits, such as in the case under consideration, will be useful in the diagnosis of particular forms of calculi.

About an hour after the operation there appeared to be some spasmodic effort to get rid of urine and detritus, but hot fomentations to the hypogastrium and to the perineum, and an anodyne draught, with hyoscyamus, relieved them.

3 o'clock, p.m.—On visiting the hospital I found the man out of bed, passing water, contrary to directions given him to empty his bladder whilst lying horizontally. About half a pint of urine escaped, slightly tinged with blood, and mixed with a good deal of soft detritus, but no particles of any size were visible. He was not in much pain, but yet did suffer from repeated and urgent inclination to pass water. He was directed to have his anodyne draught repeated, and to take throughout the day a demulcent drink, with tincture of hyoscyamus and muriatic acid. Hip-bath at bed-time.

Thursday, 18th, second day after sitting.—Passed the night pretty well, and suffered less pain than usual; paroxysmal attacks, in particular, less frequent; the urine escaped tolerably freely, and contained a good deal of soft powdery material, and also a few solid fragmentary particles—one about a quarter of an inch in length, and less in breadth. Does not feel thirst, and has desire for food. Takes his medicine. To have his anodyne at bed-time.

Friday, 19th, third day after sitting.—Complained much of uneasiness during night, and much scalding in passing water; amount of urine good, and quality better; considerable amount of detritus in deposit. Continue medicine; hip-bath and anodyne at bed-time.

Saturday, 20th, fourth day after first sitting.—Suffered last night from scalding along the urethra, and pain in the region of the prostate gland; no pain or uneasiness of any kind in the perineum on the firmest pressure; urine passed freely, and in fair quantity; much pulverulent detritus, mixed with mucus; no fragments.

Second sitting this day.—Operative proceedings as before; but an ordinary bed, with a firm mattrass, and the provision of a rolled pillow under the pelvis, substituted for Heurteloup's bed, and found to be very manageable. Screw fenestrated lithotrite of smaller size introduced with perfect ease; large fragmentary portions separating its blades to nearly half an inch, quickly caught, and three distinct crushings made, with audible grating sound, and without removal of the lithotrite. A considerable quantity of detritus escaped through the evacuating catheter. No fragments. During this sitting, the man was very irritable and restless. A warm drink as before, and an anodyne enema, were directed.

Sunday, 21st, fifth day after first sitting.—Night spent pretty well, yet annoyed with constant burning sensation in the urethra and penis, particularly in the prepuce and glans; uneasiness about rectum; passed a considerable quantity of detritus, with some fragmentary portions; urine in large quantity; much deposit of mucus, with detritus suspended through it. Continue treatment.

Monday, 22nd, sixth day after first sitting.—Appears in better spirits, and expresses himself relieved. Passes water more freely, and in a larger quantity at a time. Only one solid fragment of detritus this day, remainder pulverulent, and mixed with mucous deposit, which latter is less in quantity than heretofore, and devoid of any tinge of blood. Continue treatment.

Tuesday, 23rd, seventh day after first sitting.—Report this day much as yesterday. No detritus of moment in solid portions; darting pains in penis less, also in rectum; quantity of mucus less, but tenacious, and full of pulverulent detritus.

Wednesday, 24th, third sitting.—Eighth day after first sitting. Again proceeded to operation. Chloroform, at his desire administered; effects of it most unsatisfactory; violent automatic movements and complete want of control before anesthesia produced. Steps of operation as at former sittings, and ordinary bed used. Civiale's scoop lithotrite (Charrière's), introduced, and many small fragments of stone crushed with perceptible grating. Detritus-catheter not used, as much of the fluid injected into the bladder escaped during the effects of the chloroform. Warm drink as before; an anodyne at bed-time; hip-bath as usual.

Thursday, 25th, ninth day after first sitting.—Expresses himself as not having suffered from the operation; passed some large and solid portions of detritus, one of which gave great pain, and caused some discharge of blood; in all other respects better; darting pains through penis less, and also uneasiness about the rectum and anus. Mucous deposit in urine as before, portions of it slightly tinged with blood; quantity of urine natural.

Friday, 26th, tenth day after first sitting.—Report favourable; principal painful symptoms subsiding; now can move about with more comfort. Urine acid, and with less deposit; any detritus which escapes is in shape of powder mixed with mucus.

Saturday, 27th, fourth sitting this day.—Eleventh day after first sitting. Chloroform demanded, and exhibited; same unsatisfactory effects. The bladder having been more tolerant of the presence of urine, and now often containing from four to six ounces, I hesitated

to inject any water, or draw off any urine, apprehensive of the effects of the chloroform. I introduced a lithotrite, acting without a screw, by manual pressure, but found the fragment of stone caught so hard and unyielding that I could not crush it. I at once substituted Civiale's scoop lithotrite (Charrière's), and succeeded in crushing, with a sharp and audible click, several fragments. No detritus-catheter was used. Treatment subsequent to operation as before.

Sunday, 28th, twelfth day after first sitting.—Spirits excellent; not the slightest injury from operation. Some complaint of pain in the escape of the larger portions of detritus-fragments, one of which became impacted near the orifice of the urethra, and required force to remove it. Amount of detritus considerable, and consisting of portions of variable size, some very sharp and angular, others thin and scaly; amongst them was one very remarkable, being apparently the nucleus of the original calculus, or a distinct calculus. Urine improved; reaction acid; no tinge of blood in deposit. Treatment as before.

Monday, 29th, thirteenth day after first sitting.—Excellent report; only a few portions of detritus, which were passed with ease; no appreciable amount of viscid mucus or blood; general expression of satisfaction. No impediment to escape of urine, and all pains subsiding. Irritability of bladder less; but as yet passes water every third or fourth hour. Appetite and general health good. Urine greatly improved; reaction distinctly acid; heavy odour removed; average density; mucous deposit less. Bark and nitro-muriatic acid; wine.

Thursday, 30th, fourteenth day after first sitting.—Most favourable report; almost all painful sensations removed, and irritability of bladder so much less that he is now only obliged to pass water twice during the night, and no anodyne is required. Amount of mucus in the urine much less, and less tenacious; no detritus visible in pulverulent form, or in fragmentary portions. He now is able to move freely about the wards without the slightest annoyance.

Wednesday, 31st, fifteenth day after first sitting.—More irritability of bladder last night and this day than for twenty-four hours previously; amount of urine passed at each evacuation between six and eight ounces; and though with deposit of mucus, yet latter not so copious or so adhesive as before. Sensation in neck of bladder as if some portion of the stone yet remained. Walked about a good deal during the day, and without inconvenience. No appearance of fragments, and very little detritus.

Thursday, Nov. 1st, sixteenth day after first sitting.—Report good; irritability of bladder less than yesterday; urine as above. Introduced large evacuating cathether (No. 16), and drew off not less than half a pint of limpid urine. Had sensation of a slight click from a shell of detritus, when last portion of fluid was escaping. Very little mucus or detritus in urine. Took a good deal of exercise during the day. No uneasiness experienced, and can pass his urine in any position.

Friday, 2nd, seventeenth day after first sitting.—Report equally favourable as regards absence of pain and irritability of bladder; quantity of mucus in urine much less, and no detritus worth noting. Sensation of particles of stone in the bladder continues. Civiale's scoop lithotrite (Charrière's), introduced; no detritus discoverable within blades of instrument.

Saturday, 3rd, eighteenth day after first sitting.—Walked about a good deal yesterday without annoyance; this day, spirits very good. Now wishes to leave hospital, as all painful and distressing sensations have disappeared, and he is anxious to resume his work. I examined most carefully for the presence of any portion of detritus, with sound, with lithotrite, and with the large evacuating steel catheter, after injecting the bladder. I even had recourse to Sir Philip Crampton's glass exhausting-apparatus, with his kind assistance, and I failed to discover a trace of any remnant of stone.

Monday, 5th, twentieth day after first sitting.—No appreciable annoyance felt from the above extended examinations. Anxious to return to his employment, and left the hospital this day at his own desire, having promised to report himself occasionally.

Saturday, Jan. 5th.—This morning this man applied as an out-patient, stating that he had been employed at his trade since he left the hospital (now two months past), that since that time, at irregular intervals, he had some irritability of his bladder, and that now, without suffering any previous pain or uneasiness, he had the sensation as if some of his urine had escaped involuntarily, when, on examination, he found his shirt largely stained with blood, and blood flowing rapidly from the urethra. Yet, notwithstanding, he would remain out of hospital under external treatment, being free from suffering, and not wishing to give up his work. In the meantime, the hematuria, being partially but irregularly controlled, ultimately became so severe that he was obliged to apply for re-admission into hospital.

He was re-admitted on the evening of Friday, the 11th January.

Saturday, Jan. 12th.—This morning I inquired carefully into his symptoms, and found that the hematuria was very severe; that the blood escaped, mixed with urine, and that a thick stratum of it lay, coagulated, at the bottom of the urinal. The urine was acid, was of ordinary density, and there was no appreciable amount of mucus in it. The bladder was so tranquil that he was able to retain his urine for six or seven hours, and the stream was never interrupted as heretofore. The amount of bleeding from the urethra was now considerable; it trickled freely from the urethra, and was not influenced by pressure along the track of that canal. I examined carefully for any irregularity, fulness, or tenderness, to indicate the presence of a fragment of detritus. I could detect none; neither was there any indication of such in the prostatic portion of the urethra, as ascertainable through the rectum. The stream of urine was not uniform, and the sensation was that as if the blood in the urethra interrupted it. Rest was enjoined, ice applied to the perineum, and iced drinks were given internally in conjunction with large doses of gallic acid. The urine was carefully examined. The blood appeared to be universally mixed with it, at the same time that the tinge was deeper at the end of micturition; there was no pain, no forcing or straining of the bladder, and there was no mucus of any moment. The density of the urine was about 1020. I could detect no detritus in the deposit. In the absence of retention of urine, or any sensation of obstruction of any moment in the urethra, I did not introduce a catheter. In the course of the day the hemorrhage suddenly increased, and at the same time a sensation was felt as if a portion of calculus was escaping along the urethra; bleeding now was still more violent, the blood highly arterial in colour, and the penis became almost fully erect; an urgent desire to pass water supervened; a sudden interruption to the stream took place, when a large shell of stone was found impacted near the orifice of the urethra. It was with some dificulty removed; it was very sharp at its edges and angles, and measured in its longest diameter at least a quarter of an inch. The first pain experienced since the commencement of the hemorrhage was now, when this fragmentary detritus-portion blocked up the canal of the urethra; and on its removal the hemorrhage and all other symptoms ceased, and after a few days the man would leave the hospital.

About a month afterwards he called at the hospital, stating that

he was perfectly well, and I have from year to year repeatedly seen him since, perfectly free from any urinary complaint.

Fig. 1 in the plate exhibits, of their full size and shape (many conchoidal), several fragmentary portions of detritus collected in this case. The distinct calculus alluded to is also visible, and it is questionable whether this is to be considered as the nucleus of the original calculus, or whether it may not have been a separate calculus altogether. The weight of the fragmentary detritus collected, when dried, was nearly two drachms. The remarkable want of correspondence between the rational and the physical signs of stone in the bladder, as tested by ordinary sounding, is most important to bear in mind, as errors in diagnosis may otherwise occur. It appears to be satisfactorily accounted for by the amount of viscid mucus present in the urine, as a calculus enveloped in such coating (if it even were a mulberry one) will not communicate to any metallic instrument the sharp click of a calculus situated in non-mucous urine. I have known the same deceptive sensation produced by coagulated blood around a stone, and this, more than once, deceived in the operation of lithotomy, when much hemorrhage had taken place into the bladder, and much annoyance was hence experienced, in what I may at present term the forceps, or last trying stage of that operation. The stone will be within the range of the forceps, and perhaps within its grasp, and the surgeon will not feel it under such conditions The knowledge of such contingency is hence obviously of much practical importance.

I may here allude to the case of a little boy in hospital at this period, with stone in the bladder, accompanied with unequivocal signs, both rational and sensible, upon whom I performed the operation of lithotrity. I had procured a child's *brise-pierre* from M. Charrière, of Paris, and first used it as a lithometer and sound; at the blades it corresponded with No. 8 on the ordinary scale, in the shaft it was not more than No. 6. I ventured to crush the stone, which was not larger than a garden pea. The force required was considerable. The sound elicited was sharp and loud. The child, although fully under chloroform, was by no means manageable, as repeated straining efforts of the bladder were being made, exactly as in a fit of the stone. Some detritus was removed in the lithotrite, but evidence of any subsequently was most unsatisfactory, from the difficulty of collecting it; and I may remark that the lithotrite was a blade-lithotrite, *unfenestrated*; indeed, I have not seen any *fenestrated* lithotrite suited to children. My impression respecting

lithotrity was so unfavourable that I have not since adapted it in boys. The urine in this case, and the detritus, indicated the lithic calculus, the most frequent in the child. This child, now aged ten years, lives in the neighbourhood of the Richmond Hospital, and has never since had a symptom of urinary complaint.

Case II.—*Stone in the Bladder; Rational and Physical Signs; Characters of the Urine; Oxalate of Lime Calculus; Operation of Lithotrity; Peculiarities of Detritus Fragments; Permanent Cure.*—A young man, aged twenty years, was sent to me from the County Meath, labouring under marked symptoms of stone in the bladder, from which he had suffered for very many years. He was of medium frame and stature, and his general health was excellent. Now his desire to pass water was hurried and frequent, and seized him in irregular paroxysms, which were brought on by any rough movements. He did not observe that the stream of urine was at any time suddenly interrupted during micturition; neither did he, at the end of it suffer any additional pains. His penis was enormously developed, and was almost persistently in a state of semi-erection. He never had hematuria, and any change in the appearance of the urine had not attracted his attention. Such was his condition on his admission into Richmond hospital in April, 1861.

There was no difficulty in detecting the presence of a stone in the bladder, and from the sharp ringing sound elicited during the examination, it was concluded that the stone was principally oxalate of lime. The character of the urine tended to confirm this opinion. Its colour was a light straw, its reaction acid, its density about 1020, its odour not disagreeable, its deposit was that of a peculiar semi-transparent tomentous mass[a] which I almost always find to indicate the presence of oxalate of lime, and there was no appreciable amount of mucus.

The stone was caught easily with the lithotrite, and found to measure about one inch, but any extreme accuracy regarding its size was not attempted, the man being very irritable, and his bladder and urethra being equally so. The question of lithotomy could not

[a] This peculiar deposit is accurately outlined in one of my plates. When it is once carefully studied, it will be found to be almost conclusive as to the presence of crystals of oxalate of lime. Indeed, if such specimens be examined, in the recent state, even with the naked eye, under a strong sunlight, minute scintillating points will be visible through the deposit, and these, under the microscope, will be found to be oxalate of lime crystals.

be entertained, as the man was determined not to submit to any cutting operation, and indeed, from the size of the penis, I was not an advocate for it. Lithotrity was hence decided upon, and after some preparatory treatment I proceeded to accomplish it.

Tuesday, 7th May, 10 o'clock, a.m.—This day the first sitting took place. I did not use Heurteloup's rectangular bed; I found a common hospital bed, prepared as in the former case, to answer all requisite purposes. The man was very timid, and apprehensive of pain. However, I did not give him chloroform. Before my visit to hospital, according to his statement, he had passed about four ounces of urine, so that I was satisfied with injecting about the same quantity of tepid water into the bladder. I now introduced with perfect ease, and with trifling pain, Weiss' improved fenestrated lithotrite, of No. 13 size. Pressing the instrument gently towards the back part of the bladder, and with equal gentleness raising the handle, whilst I kept the shaft steadily fixed, I lifted the movable blade of the lithotrite to the distance marked in the measurement above noted, when, approximating it towards the fixed blade, I at once felt that I had caught the stone. Getting a firm grasp of it, and drawing the lithotrite a short distance forwards, I commenced the screw movement. During its working, which required much force, an irregular grating sound was audible, when a loud crack followed, which alarmed me as to the safety of the blades of the lithotrite. It is no exaggeration to state that this sound was distinctly heard at a considerable distance in the operating theatre. The sound was an abrupt sound, unaccompanied by any crushing sensation in the closing of the blades. Again the blades were separated, and during a second screw movement the same result followed. I ceased from any further manipulations, and removed the instrument. In about ten minutes afterwards he passed nearly half a pint of urine in an uninterrupted stream, in the erect posture, and with tolerable ease; there was not visible the slightest tinge of blood. He was ordered a draught with tincture of hyoscyamus, a tumbler of hot wine negus, and a hip-bath.

Four o'clock, p.m.—I visited the hospital, and found this man comparatively free from any complaint, and extremely difficult to be kept confined to his bed. He had passed water once in large quantity, and without much uneasiness, but with the sensation that the stone was broken, and that the broken pieces were grating against each other. No detritus had passed. Demulcent drinks; hyoscyamus draught and hip-bath at bed-time.

Wednesday, 8th May, day after first sitting.—This morning the report was not very good; he had not a hip-bath as directed; he suffered a good deal through the night, particularly at the end of micturition; he had no rigor, but the pulse was quick, and he had some thirst. The urine passed in the glass urinal was acid, muddy-ish in colour, and threw down an opaque deposit, in which very many minute particles of detritus, of a dark colour, were visible. Saline draughts, with tincture of hyoscyamus, were directed, and a hip-bath at bed-time.

Thursday, 9th, second day after first sitting.—Better night; benefit from hip-bath, but yet much pain at the end of micturition; no feeling of obstruction in urethra; pain referred to about the root of the penis; passed water more frequently than usual; urine much as noted; no detritus of any moment.

Wednesday, 15th, eighth day after first sitting.—Two days back, at his desire, chloroform was administered, and the effects were so unsatisfactory that all operative interference was necessarily suspended. The vesical irritation produced was considerable for many days; calls to make water were more frequent both night and day, and pain was always referred to the perineum, immediately in front of the anus. No fever could be said to be present, but there was much irritability and sensitiveness. Under local and general treatment these symptoms subsided, and now a second sitting was decided upon.

Second sitting.—He was removed to the operating theatre, and placed in proper position, under the influence of chloroform. Previous to its full anesthetic effects I proceeded to inject the bladder with tepid water, and although doing so with the utmost gentleness, so violent a vesical paroxysm was produced that the urine and fluid injected were forced out along the side of the catheter. I withdrew it when under full anesthesia. Reinjecting the bladder I proceeded with the operation, using Weiss' fenestrated lithotrite, No. 14 in size at the blade, less in the shaft. It entered the bladder freely. Portions of stone were easily and quickly seized, and crushed with varied force—some appearing to fly from under the lithotrite, whilst others were audibly cracked. All this was effected in a short space of time, and without the escape of any urine during the sitting. The man awoke out of his sleep, had an anodyne draught and some sherry negus, and was placed in bed. The urine was not drawn off, neither was he urged to pass it after the operation.

4 o'clock, p.m.—Visited the hospital, and found that a considerable portion of detritus had escaped; particles distinct, angular, and of different sizes, presenting, on examination of the different surfaces, evidences of the ordinary mulberry calculus. Some fragments are accurately outlined in the plate in Fig. 2, nodulated externally, in apparently aggregated masses of globular form, and in size about that of an ordinary garden pea, all as if cemented together and covered by snow-white glistening particles of oxalate of lime and triple phosphate. On the outer surface of many of these fragments there was a beautiful appearance somewhat resembling pearl-spar crystals, in some parts being as if transparent, in others opaque, the former being more particularly visible in strong sunlight. The section of many of those fragments presented a laminated and undulating appearance. Hip-bath; continue anodyne.

Thursday, 16th, ninth day after first sitting.—This morning good account, passed fair night; scalding and pain in passing detritus, especially some large fragmentary pieces; in other respects tolerably easy; no pain in or about region of bladder; sensation uncomfortable in perineum as before, and distinct sensation of obstruction from fragments in urethra; will not permit any interference to remove them.

Friday, 17th, tenth day after first sitting.—Report cheering. Very large portions of detritus, one sharp and angular, and so large as to pass with difficulty through No. 16 on the guage scale; it escaped by itself after repeated efforts to dislodge it, and was followed by some hemorrhage; its several edges were sharp, irregular, and laminated, and evidently consisted of an oblique chip, including much of the outer surface of the calculus. General condition comfortable; sensation that no more of calculus remained; at the same time there was pain in micturition, and especially at latter end. Examined specimen of urine passed with the portion of detritus—colour, brownish; odour, natural; density, 1018·20; reaction, acid; deposit copious, opaque, brownish-yellow, slow in forming, with supernatant fluid clear. Under the microscope, blood corpuscles and pus corpuscles were distinctly visible, also some crystalline colourless masses, with a few octahedra of oxalate of lime.

4 o'clock, p.m.—Comparatively free from pain, but yet some at end of micturition; passed two large coagula of blood, darkish and clotty; no detritus traceable. Demulcent drinks, with nitro-muriatic acid; hip-bath if required.

Wednesday, 18th, eleventh day after first sitting.—Tolerably

quiet, but yet no pain after micturition; urine dark chocolate-colour throughout, with some flakes of coagula floating through it; copious deposit; acid reaction; no detritus of moment; if any, pulverulent. Continue medicine.

Thursday, 19th, twelfth day after first sitting.—Report favourable; good night; pain in micturition less; blood disappeared; disposed to get up and walk about; condition of urine much as yesterday, with very slight trace of blood in deposit; no detritus of moment.

Friday, 20th, thirteenth day after first sitting.—No special complaint; no return of hematuria; some more frequency in micturition, and more pain at end of it; attributed to walking too much; no detritus of moment. Continue acid, and bath at bed-time.

About this time he became very irritable and unmanageable, and would not submit to any additional sitting unless under the influence of chloroform. Its effects were decidedly injurious, and increased intensely all his urinary suffering so much, that any interference in way of operation was wholly inadmissible. Ultimately, however, the symptoms became less severe; at irregular intervals different portions of detritus escaped in the urine, and it assumed a more healthy character; there was much less mucus in its deposit, and there was no appearance of blood. He now became dissatisfied, and wished to leave the hospital, when I persuaded him to remain, and again submit to treatment.

Thursday, June 6th, fourth sitting, 10 o'clock, a.m., thirtieth day after first sitting, and sixteenth day after third sitting.—Operation in ordinary bed as before. Chloroform necessarily exhibited; full anesthetic effects produced. Bladder not injected, urine having been retained for some hours. Flat-bladed lithotrite, No. 14, 15, introduced; many fragments easily caught and crushed; pulverized as much as could be. Warm negus and anodyne draught given before effects of chloroform fully disappeared. Directions to remain in bed, and not to pass water until inclination to do so.

4 o'clock, p.m.—Called at hospital. Saw urine passed an hour after sitting; quantity about six ounces, and not a trace of blood in supernatant fluid or in deposit; much detritus, some in large masses about size of small pea, escaped without pain or much of forcing. Demulcent drinks; to have anodyne and bath at bed-time if required.

Friday, 7th.—Most satisfactory report; detritus escaping freely, and in less quantity; sensation as if all portions of stone had now been removed; some tenderness and scalding along the track of the

urethra, and after micturition; all other symptoms improved. Treatment as before; add to demulcent drinks nitro-muriatic acid.

12th June, thirty-five days after first sitting, sixth after fourth sitting.—Such decided improvement in all symptoms that he determined to leave the hospital this day. No detritus during the last two days; no irritability of bladder; no uneasiness of any moment; note of urine satisfactory. Left hospital.

August.—Letter from, stating that he was quite well.

May, 1863.—Called at hospital; remains free from any symptom of his disease; in rude health.

In Fig. 2 in the plate, portions of the detritus which escaped spontaneously through the urethra in this case are very truthfully delineated. Their size, and their peculiarly angular form, are by no means exaggerated, they are most accurate. Their outer, irregular mulberry surfaces, can also be recognized, with the frosty coating mentioned in the details given; and the laminated appearances of the lateral sections will be also visible to some with the naked eye, to others with a lens. The weight of the detritus, collected and dried, was within a few grains of three drachms. The great density and weight of those several fragments are very remarkable.

Case III.—*Irritable bladder, with Recurring Attacks of Retention of Urine; Supervention of Rational Signs of Stone in the Bladder; Sensible Signs; Conclusive Character of the Urine; Operation of Lithotrity; Nature of the Detritus; Cure, with Recovery of the Functions of the Bladder.*—A man, a mason by trade, and aged between sixty-five and seventy years, was sent to me from the County Cavan, with symptoms of urinary disease, which distressed him for more than two years. The irritability of his bladder was very great at the commencement, and ultimately terminated in occasional attacks of retention of urine, occurring at irregular intervals. He was now admitted into one of our county infirmaries, and whilst there was taught to relieve himself from retention of urine by the introduction of a catheter when required; upon these symptoms, latterly, others very painful supervened. He often had incontinence of urine, as well as retention, and the catheter often failed to give him relief as before; he required its use more frequently; during its introduction, particularly as it reached the bladder, his pains were excessive, and still after the urine was drawn off he suffered acutely. His urine, moreover, became muddy

in colour and heavy in smell. He applied at hospital with a recommendation from his medical attendant, and I admitted him in May, 1863.

His journey to town increased in intensity all his symptoms. His urine as passed at that time was clouded, feebly acid, in density about 1018, and it had a fetid odour. Its deposit, on resting, was opaque; contained urates in large abundance; its supernatant fluid was clear, and there was no albumen. Under the microscope, granular bead-crystals of urate of ammonia were visible in the deposit, intermixed with some tabular plates of uric acid crystals, and some mucous corpuscles, apparently pus corpuscles in size and outline.

The bladder was then tolerant of the presence of urine; the man was in fair bodily health for his age; he was apparently a placid person; and the prostate gland was not more enlarged than to be expected at his period of life.

Satisfied with the presence of stone in the bladder, from the rational signs detailed by the man, expecting its physical signs from the account of his medical attendant, and concluding the nature of the calculus present from the character of the urine, I introduced as a sound, and as a lithometer, a fenestrated screw lithotrite of ordinary size (No. 14), intending merely to measure the stone if found, and purposed to defer the crushing process until a future day. I at once caught the stone in the ordinary horizontal position of a patient lying in his bed. The sound from it was an audible sharp sound; it measured an inch or so, and out of the grasp of the lithotrite I could not shake or loosen it by any manœuvre. I had no alternative—I worked the screw at once, and crushed the stone. Many distinct crushings of the broken pieces were accomplished at the same moment, without any difficulty, when I removed the lithotrite. I had not injected any fluid into the bladder, neither did I now use the evacuating catheter. The bladder bore the several manipulations well, and voluntarily discharged itself about twenty minutes afterwards without much uneasiness, the urine being mixed with much pulverulent detritus. Any irritation produced was slight, and was easily controlled by mild anodyne treatment.

The daily records taken in this case would be only tedious to recapitulate from their great similarity to those already noted; the several sittings required, and the intervals between them were nearly the same; the effects, as shown by the deposits, both

fragmentary and pulverulent, were much the same, and their final results, though occasionally interrupted, were equally satisfactory. The man was able to empty his bladder without the necessity of a catheter, he was free from any painful sensation about the bladder, and the urine had gradually acquired a healthy condition. The last portion of fragmentary detritus was rather tedious in being removed. It was, however, ultimately and most satisfactorily so, and on this occasion the bladder was injected as largely as it could tolerate, and certainly to the extent of containing at least eight ounces of tepid water. This amount of fluid was thrown in with a gum elastic bag of requisite size, provided with a conical shaped ivory tube, which accurately filled a catheter (No. 8), almost straight, and with small openings, so that the fluid could necessarily only enter the bladder very slowly and in very minute quantities at a time. Civiale's scoop lithotrite (Charrière's), with the fixed blade hollowed or spoon-shaped, and the movable short and abrupt, was now introduced, and struck the particle of stone, when, by a sharp and sudden turn of the disk, the particle was caught and pulverized. After this sitting all symptoms of uneasiness quickly subsided, and the man left the hospital in about a week afterwards, in the beginning of August, free from his former sufferings, and able to empty his bladder without the necessity of a catheter. His urine was not as free from mucus as might be wished, but yet was from day to day improving in every respect. I had a letter from him two months subsequently, stating his comfortable condition and freedom from his former symptoms, and I have lately heard from his neighbours that he continues well.

In Fig. 3 an outline is given of the appearances of the portions of fragmentary detritus collected. Their size and resemblance in shape to those in Fig. 1 will attract attention, and also their chemical composition. The weight of all, when dried, was about two drachms.

The necessity for reporting the daily progress of the above cases may be questioned by some, and yet it is very desirable that the young surgeon, or the advanced student (for whom alone these records are intended), should be acquainted with the several contingencies likely to arise in the progress of any operation he may contemplate. The operation of lithotrity is of rare occurrence in our hospitals; and as they are often the most reliable, and, if necessary, the more legitimate places for clinical investigation, it is desirable to place the results observed on record. Many useful reflections must

suggest themselves in considering the history and progress of these cases, both previous and subsequent to their treatment; and it does so accidentally happen that rarely, indeed, could a series of cases be adduced more instructive and more demonstrative of the great value of the operation of lithotrity, even under the very unpromising circumstance of advanced age, and of nature of calculus, apart from other embarrassments, rendering extremely questionable a favourable issue. Successful as was the result of these cases, it is possible that the cure might have been more rapidly effected, and with perhaps less of suffering on the part of the patient, under the present advantages of more modern lithotrity. Now, the bed of Heurteloup is considered obsolete; the injection of the bladder before operation, or its being emptied after operation, conditional; the position of the patient in some degree optional, and that of the surgeon in respect to his patient often equally so; the selection of lithotrite, and mode of introduction, optional or conditional; the manner of seizing or crushing the stone, or the fragment of stone, shall I say, fanciful; the removal of the detritus, fragmentary or otherwise, spontaneous as regards the bladder, or mechanical, slow or abrupt, as effected by the surgeon; and ultimately the number and repetition of the lithotrities conditional. Such is a hurried summary of the particulars of the several steps of the operation of lithotrity as usually performed. The operation now is very rapidly accomplished, and it is not surprising that it should be so, when we consider the improvements latterly made in the mechanism of the several appliances required. In none have these improvements been more manifest than in the light and beautiful lithotrites of Weiss, so commonly used at present. Whether fenestrated or not, the improvement made in them, both as regards size and details of construction, are incomparable, they facilitate and expedite the uses of those instruments, and admit of their more general introduction from their varied size. They possess the great advantage of retaining the stone or fragment of stone between the blades, during the moment of changing the sliding into the screw movements, and this without the necessity of any alteration in the position of the hand of the operator, from a provision whereby a slight movement of the thumb accomplishes the object. Moreover, with their fluted and cylindrical handles (suggested by Mr. Thompson) they also possess the great advantages by which, with a slight movement of the finger, the most delicate turning of the blades laterally, or even to complete rotation if requisite, may be accomplished; and moreover,

a firm and immovable grasp of the instrument taken, and thus the crushing of the hardest stone be as safely as certainly secured. Other advantages derivable from the special form and action of the blades of those valuable instruments must attract attention when investigated. It would be out of place here to enter into the consideration of them. With the instrument in hand they can be carefully studied, when the influence of the slightest elevation or depression of the handles of the lithotrite, or deviation from the proper direction of the shaft, will show the necessity for continued attention on the part of the operator to those minute particulars, as indicating the position of the blade, whether closed or open, and directing their safe and successful application. A few passing remarks may be permitted, in conclusion, respecting the position of the patient and that of the operator, the selection of the lithotrite and its mode of introduction, and its manipulation in the bladder, and the removal of the detritus. I prefer that the patient should be placed opposite me, either on a table of requisite height, with or without provision for the elevation of the pelvis, or, as I often find very convenient, at the foot of his bed, arranged as may be considered best. In the selection of the lithotrite, as to number I am guided by the calibre of the urethra, always providing that the sliding portion of the shaft shall have free space for loose movements, and I select either the lithotrite fenestrated or with entire blades, according to the special object in view.

If, as a lithometer to measure a stone, the blades should be plain—equally so, but shaped according to the objects in view, if for crushing or pulverising fragments; but if at a first sitting and to break a stone, the lithotrite must be fenestrated. During its introduction I latterly always place myself between the thighs of my patient, taking care that they shall be widely separated, and firmly supported, with the legs and feet properly placed. After some trials I find this position preferable to any other. Doubtless, the lithotrite may be introduced, when used as a lithometer, as the ordinary catheter, but for lithotrity purposes I prefer the position I mention. I always take care to have the abdomen fairly exposed, so that the umbilicus may be held constantly in view as an unerring guide to the safe direction of the instrument. I pass it with my right hand into the urethra, and press it onwards towards the perineum, at the same time drawing forwards the penis to the extent required. I now having reached the perineum, transfer the lithotrite to my left hand, when, gently depressing its handle, or

even allowing it to fall with support by its own weight, the bladder is immediately reached. In this latter movement I fancy I have often found it a good plan to divert the mind of the patient from this—the most important, and often the most painful movement in the operation—by making gentle pressure with the palm of the right hand over the pubic region, or with the ends of the fingers over the perineum in the seat of the angle of the lithotrite, and so to assist its onward passage. The amount of depression of the handle of the instrument above alluded to must be measured by the presence or absence of prostatic disease, or by that of the bar-like ridge at the neck of the bladder. In either case the depression required may be considerable, and in both a certain amount of additional force is necessary to secure the satisfactory entrance of the instrument into the bladder. The depth to which it should be passed will much depend on the same contingencies. The subsequent manipulation must be conducted with the greatest caution and gentleness. By some surgeons the stone will be seized instantaneously, and in any position of the patient; whilst by others, select what position they may, the greatest difficulties and perplexities will arise, and very often there is a complete failure in catching the stone. I have noted in the history of the cases detailed, that it is well to open the lithotrite whilst engaged in the operation to the extent to which the movable blade had reached on the scale when the stone was recognized. If this be attended to it will prevent the partial separations of the blade which are as useless as they are often most injurious.

Those directions for seizing and crushing the stone—which are now fully detailed and discussed in all the recent works on surgery, and in none more satisfactorily and clearly than in the article on "Lithotrity," in the fourth volume of Holmes' *System of Surgery*—I cannot now further consider. It seems some improvement was called for in the detritus or evacuating catheter, when the use of such might be advisable, and I give a woodcut, executed by Mr. Oldham, of one which I have found useful (Figs. 1, 2, and 3). Its size may vary, but to be efficient it should not be under 14 or 16 on the scale. Its curve is short and abrupt, and one large opening exists on its concave surface, near its extreme end. There is a strong stilette, with a ring at one end and a chain attached to a firm pellet at the other; this stilette and chain fit the catheter loosely, and its length exceeds that of the latter by an inch or so. The advantages of this instrument I have found to be, that

Fig. 1.

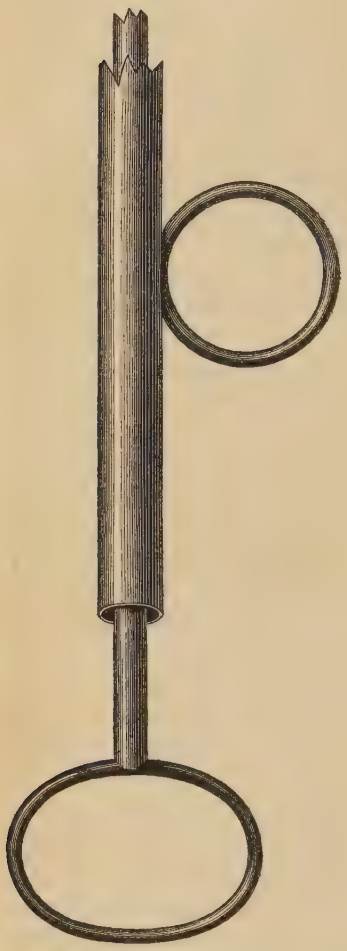
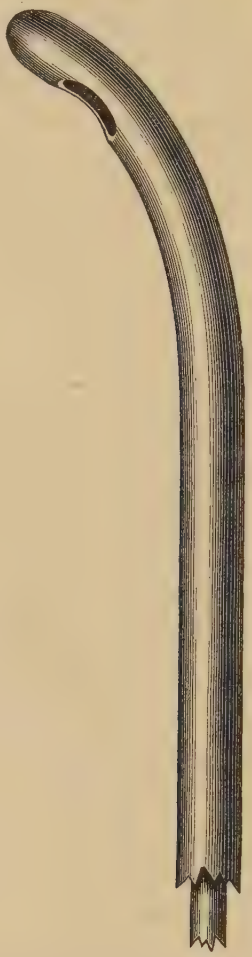


Fig. 2.



its short curve admits of its extremity being turned safely towards the ordinary situation of detritus in the bladder, and hence that it may be more satisfactorily commanded and influenced by injection thrown in. The provision in the stilette will admit of its pulverizing or clearing detritus without at the same time interfering with the spontaneous escape of urine or other fluid from the bladder. To this catheter may be attached the several varieties of syringes in use, and amongst them that which has been recently recommended, and which may be termed a "flushing syringe." I have had a wood-cut executed of an addition to this syringe (Fig. 4), which

Fig. 3.

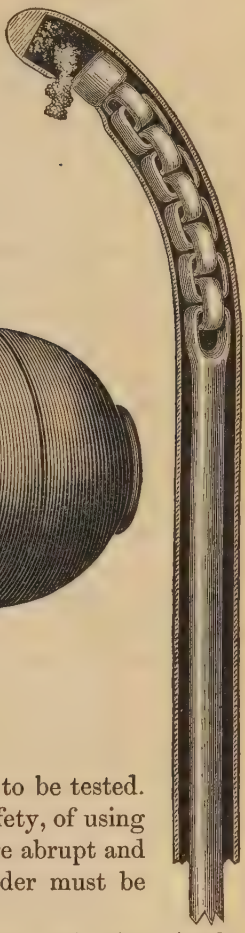
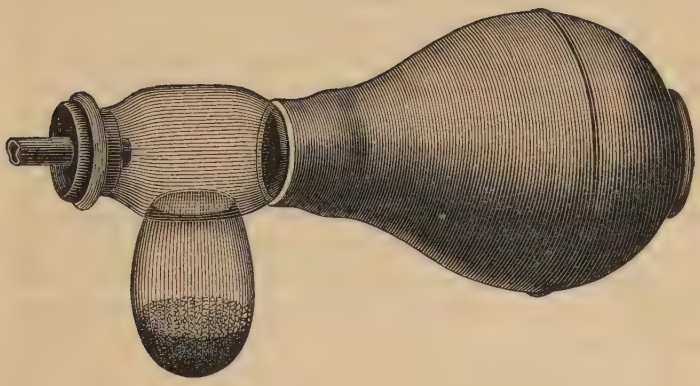


Fig. 4.



may, perhaps, be found efficient, but it is yet to be tested. I doubt very much the efficiency, if not the safety, of using such class of syringe in urinary diseases, where abrupt and sudden changes in the capacity of the bladder must be produced.

The history of the case of lithotomy identified with Fig. 4 in the Plate is, of necessity, deferred. Suffice it to say, the operation was the lateral operation—the several calculi delineated were removed within a few seconds, and the recovery of the man has been perfect. His age was beyond 60. He was admitted into the Richmond Hospital in September, 1859, and left, free from all urinary suffering, in the early part of the November following. He has had neither retention or incontinence of urine since; and he has on many occasions presented himself at the hospital free from his former complaint.

ART. X.—*A few Remarks on Sun-stroke, or Heat Apoplexy, with Four Detailed Cases, and their Treatment.* By C. P. BAXTER, A.B., M.B., L.R.C.S.I., Assistant-Surgeon 93rd Sutherland Highlanders.

THE following cases of sun-stroke, or heat apoplexy, occurred amongst the men of the 93rd Highlanders during the hot seasons of 1864 and 1865, while the regiment was quartered at Sealkote, a station situated in the Rechna Doab division of the Punjaub, on the left bank of the Chenab river, about sixty-three miles N.N.E. of Lahore, and in lat. 32° 29′, and long. 74° 33′. The district of Sealkote extends over an area of 1,457 square miles, and has a native population of about 641,782. It is a wide plain of sedimentary deposit, perfectly open, and almost completely under cultivation, and free, to a certain extent, from malarial poison. The neighbourhood of the station is planted with trees, and vegetation is luxuriant in it. The rains do not come on here with the same regularity they do in the lower portions of Bengal, and the thermometer at certain times rises very high, as will be seen from the accompanying table, taken from observations made regularly throughout the year:—

Date	Max.	Med.	Min.	Wind	Date	Max.	Med.	Min.	Wind
1864					1865				
24th June,	106	95	85	W.	24th June,	108	98	88	S.E.
25th „	106	95	85	W.	25th „	106	98	90	S.E.
26th „	109	98	86	E.	26th „	106	99	91	S.E.
27th „	110	98	87	E.	27th „	107	99	92	S.E.
28th „	111	98	88	E.	28th „	107	99	92	W.
29th „	110	98	87	E.	29th „	110	101	92	W.
30th „	109	99	90	E.	30th „	106	100	95	W.

It is not, however, in my opinion, when the greatest heat is registered by the thermometer, nor when the sun's rays are most intense, that men are stricken down by this fearful disease; neither do I think that sun-stroke is frequently caused by the direct action

of the sun's rays striking the body, unless it be exposed to them for a long time—or in a quiescent state, as in the case of a man getting drunk, falling down on the plain, and lying there for some time, with the sun beating on him; such a man is nearly sure to get sun-stroke, and die from it also. The state of the atmosphere I consider most conducive to sun-stroke, from the experience I have had, is, when it is largely impregnated with watery vapour, with the thermometer ranging from 95° to 102° in the shade; when clouds hang over the head, when there is hardly a breath of wind, and the day is what is called a heavy one at home. The body then, if in a healthy condition, sweats very profusely, and this, I think, is one of the outlets that keeps one in health, and partially assists in preventing congestion of the internal organs. For in sun-stroke, as will be seen in the detailed history of the cases, the skin never perspires, remains perfectly dry, and even during recovery it is sometimes found difficult to keep up its action. These facts as to the state of the atmosphere and the action of skin, will all better appear on reference to the cases.

This thermometrical table gives the temperature for the weeks during which these cases occurred in two succeeding years, and shows that these weeks were by no means the hottest in the season:

Date	Max.	Med.	Min.	Wind	Date	Max.	Med.	Min.	Wind
1864					1865				
15th July,	99	91	83	E.	8th July,	98	91	84	E.
16th ,,	100	93	85	E.	9th ,,	93	89	84	S.
17th ,,	103	95	87	S.E.	10th ,,	99	93	86	E.
18th ,,	98	95	92	E.	11th ,,	99	93	86	E.
19th ,,	94	89	83	E.	12th ,,	99	93	86	E.
20th ,,	88	87	85	E.	13th ,,	94	88	82	N.E.
21st ,,	99	92	85	N.W.	14th ,,	87	82	76	W.

I have already given a table showing the periods during which the thermometer reached its greatest height, and during which, also, sun-stroke was not prevalent.

I will not here enter into the pathology of the disease, as I know there are various opinions on it, but will merely state that it

appears to me, in most cases, to be caused by the body absorbing heat through the blood, which retains it up to a certain stage, when it becomes too hot for the organs it has to come in contact with, and then acts as a paralyzing agent on the cerebro-spinal system or heart, or sometimes partially on both, thus forming the three kinds of sun-stroke mentioned in books, which are much more easily described than discriminated at the bed-side.

Of the pathology of the disease I cannot, from these four cases, give much information, as death only occurred in one of them; any abnormal condition of the important organs I could notice on making the *post mortem* I have faithfully given.

On considering the *post mortem* appearances I have seen in cases of cholera, Peshawur remittent fever, and sun-stroke in this country, they all seem to me to have a close analogy to one another.

The treatment followed by me in these cases was as follows:— When the patient was carried to hospital in an insensible state, with the peculiar dry, burning skin of the disease, and with laboured breathing, the cold douche was the first thing resorted to, and this was given in the following way. Four bheesties, or water carriers, were set to work to fill their mussacks or pig-skins; they then came on, one by one, and while the patient lay naked on a low cot, they mounted on a high stool, and let the water pass in a full stream over his head, neck, spine, and body generally The next thing done was, a strong stimulating enema was given, and sinapisms were placed over the heart if it was weak, and to the abdomen if required. As soon as the patient could swallow, carb. ammoniæ was given in five grain doses. The cold water was continued over the body from a height, frequent observation as to the action of the heart, and the state of the pulse, being made. After a short time the great heat leaves the body, but continues in the head, which, however, in some cases, rapidly becomes cool. If the water is then discontinued, it is quite marvellous the rapidity with which the burning heat returns, and with it the douche must be resumed. In two of the following cases successfully treated, I have made myself certain by measurement that not less than 200 gallons of water were poured over the patient before it was safe to stop it. During the recovery an occasional blister to the scalp, or behind the ear, proves useful if any head symptoms supervene. As will be seen in the cases, I have continued ammonia for a number of days. I also gave quinine to act as a tonic, and supported my patients with light and nutritious diet.

I.—*A Case of Sun-stroke, with Complete Coma; Treatment, Death, and Post-mortem Appearances.*—Private Robert B—, age thirty-eight, a well-conducted, sober man, was admitted into hospital at 7, p.m., on the 17th July, 1864, for the above disease. I saw him a quarter of an hour after admission; his condition then was as follows:—He was perfectly insensible; breathing very laboured, and moaning occasionally; pupils quite insensible to light or darkness; skin perfectly dry, and a burning heat all over the body; heart's action tumultuous; the two sounds not distinct; pulse small and compressible; general irritation of the muscular system. When I arrived, I found his clothes had all been taken off, and he was on a low cot, having a stream of cold water poured from a height over his body. A stimulating and purgative enema was immediately given to act on his bowels, and ten grains of calomel, with two drops of croton oil, were placed on his tongue, as soon as he showed any power of swallowing. The enema soon acted on his bowels; and after the water had been continued for an hour the great heat of skin subsided slightly, and he seemed a little roused. The water was then discontinued, and a draught containing five grains of carbonate of ammonia, in an ounce of camphor mixture, was given. Very soon, however, the burning heat of skin returned, and with it, the conjunctivæ were observed to become much congested or injected, and the pupils dilated.

The scalp was now shaved, and strong vesicating collodion applied. The cold douche was again resumed to the body, and continued steadily. After a little while he began to give long and sorrowful moans, which succeeded each other at regular intervals. He had two convulsive fits; and although the cold water was kept constantly playing on him, the burning heat of skin still continued. The moaning became longer and weaker; the pulse and heart's action got weak. About 2, a.m., on the 18th, he had a slight fit, and twenty minutes afterwards he died. Up to the moment of his death, and for long after it, the burning heat of skin remained. The history I have been able to get of this man from his comrade is:—On the 17th he was at his duty at 12 o'clock (it was indoor work); about 2 he complained of not feeling well, and lay down in his barrack room, on bed. About 3.30 he got up, smoked a pipe, and talked to the man next him, and about 4 lay down again, and fell asleep. At 6, p.m., his comrade noticed he was sleeping heavily, tried to rouse him, but found it impossible; he then sent for the barrack doolie, and had him carried off to hospital, a distance of not

more than about 300 yards, and his symptoms on arrival there I have already given.

From this case it will be seen he was not a man habituated to intoxication; he was not exposed throughout the day to the sun's rays, as he spent all of it in a house; and on referring to the thermometrical table, the temperature by the thermometer did not nearly come up to some of the other days we had through the hot season of 1864, but the peculiar moist, depressing state of the atmosphere before mentioned prevailed.

Post mortem six hours after death.—Body generally well developed; marks of ecchymosis on the chest, arms, and back.

Head.—On removing the calvarium, the blood vessels of the brain were found congested, and on making a section of the brain numerous congested spots were seen in it. The ventricles contained no fluid. There was no abnormal quantity of sub-arachnoid fluid.

Chest.—The lungs were crepitant throughout, both of them congested at their bases. Heart normal.

Abdomen.—There was slight congested appearance of the omentum, and of the hollow viscera generally. The stomach was much distended with air. Spleen a bright blue colour, and small. Liver healthy. Kidneys a good deal congested. No other *post mortem* appearance of any importance.

II.—*Case of Sun-stroke, followed by Partial Paralysis; Treatment and Recovery.*

Francis B—, age thirty-seven, a tall, delicately-built man of temperate habits, was admitted into hospital for the above disease, on July 11th, 1865, at 6.30, p.m. The history of his case is:—On that morning he had been discharged from hospital, where he was under treatment for some days for chronic rheumatism in the arms and shoulder-joints, contracted during the Crimean campaign. He returned to his barrack-room, in which he remained for the greater part of the day, and was not exposed to the sun. About 3 o'clock he felt heavy in his head, and had pain in the pit of his stomach. This I have noticed to be a premonitory symptom in many cases. He continued in this way, not mentioning it to any one, until about 5, p.m., when he became worse, and then sent for a doolie in order to be carried to hospital. Shortly after his arrival there I saw him; his condition then was:—He was unconscious; skin perfectly dry, and of a burning heat; heart's action and pulse very weak; breathing prolonged and laboured; pupil of the eyes slightly contracted, and

not obedient to the stimulus of light; conjunctivæ much congested. Before I arrived the cold douche was commenced; a purgative enema was given, and a mustard sinapism placed over the heart. The enema acted freely, and I continued the douche, stopping at short intervals, in consequence of the weakness of the heart's action. He continued in this unconscious state until about 9, p.m., when he showed some symptoms of improvement. The breathing became less laboured; he could feel if pinched, or if the soles of his feet were tickled, and could notice an object if drawn across his eyes, but was still unable to speak or answer any question addressed to him. About this time his eyes became more suffused, the scalp was then shaved, and strong vesicating collodion applied to it, and the cold douche continued over the body, as it was still very hot. At 9.30 a violent fit came on, in which he remained for twenty minutes, and during it the pulse was not to be felt, or heart heard. On recovery the heat of the body was much reduced, and the intellect became more clear. By 10.30 he was able to speak, and said he knew not how he came to hospital, and that he now felt no particular pain anywhere, but had general weariness of his limbs and body. He was closely watched during the night. The great heat of body did not return. He got no sleep, but remained in a drowsy state, and had five grains of carbonate of ammonia every second hour. During the state of insensibility this man had twenty mussacks of water poured over him; each of these contained about ten gallons of water.

July 12th, 6, a.m.—Patient complains of weariness; pulse and heart's action stronger than they were; no pain in head or abdomen; the general surface warm and dry, but not very hot. About 10 o'clock some fever came on, his head became hot, and eyes suffused. Leeches were applied to the temples, and a cold douche was administered over the whole body, with benefit. Diaphoretic mixture, with carbonate of ammonia every second hour.

Evening.—Patient better; surface of body cooler, and perspiring; inclined to sleep.

13th.—He slept last night, and feels better this morning; skin is acting. Diaphoretic mixture, with carbonate of ammonia continued.

14th.—Heart's action improved; pulse stronger; skin acting; says he feels quite quiet; slept well through the night. The blister on the scalp is now healing. The mixture before mentioned continued, with five grains of quinine twice a day as a tonic.

16th.—He is going on favourably. No bad symptom that I can

see. Skin is acting, and he rests well at night. The diaphoretic mixture, with carbonate of ammonia and quinine, five grains twice a day as a tonic, continued.

19th.—He is now able to get out of bed, but says his head feels very giddy if he walks, and he is weak on his legs. He says the sensation in his legs is not quite complete, and in walking I notice his gait is peculiar, and he seems partially to draw the left leg after him. Former treatment continued.

24th.—He is gaining strength, and seems to be doing well. Is out of bed, but cannot walk perfectly. There is a peculiar totter in his gait. The lower limbs seem as if suffering from some form of paralysis. Friction to be applied, and other treatment continued.

26th.—He is not so well this morning; he complains of pain and weight in the head, and of an uneasy feeling about the pit of the stomach. The head is not hot, and the skin is acting; bowels are confined. Ordered some opening medicine, and to go on with other treatment as before.

27th.—His bowels were freely acted on, and he says he feels easier, but has yet some pain in his head. His eyes look wild, and his manner is anxious and confused. Scalp to be shaved, and a blister applied to it.

Evening.—Seems easier this evening; complains of no pain.

28th.—He says this morning that since 4.30 (it is now 6.15) he has not felt so well. He is very restless; he breathes with much difficulty; his circulation is very weak, and the heart's sounds can hardly be heard ; extremities cooler than natural. A mustard sinapism was immediately placed over his heart, and a glass of wine given him. Carbonate of ammonia, with camphor mixture, to be given every hour. While I stood by his bed, a sharp cramp came on in his right arm and leg, which was relieved by friction with the hand. I heard during the day that he was better.

28th, evening.—He is better this evening; breathes with ease; heart's action improved; has no pain in the head; and intellect is clear. Continue carbonate of ammonia, and keep blister on the scalp open.

30th.—He continues to improve; complains of no pain; and his intellect is quite clear now. He can answer questions quickly when put to him. He is yet, however, very weak on his legs, and drags the left one slightly when walking. The blister to be healed; the quinine, and carbonate of ammonia three times a day to be continued.

August 3rd.—The patient is daily improving in strength, and complains of nothing now but slight giddiness in walking, and weakness of his limbs. His legs are well rubbed daily, and he continues to take quinine.

8th.—He continues to go on well, and complains very little now of giddiness. His limbs are weak, but he is yet able to walk about unsupported, and his skin and internal organs are all acting regularly; quinine continued.

11th.—He is now convalescent. His limbs are getting more firm under him, and he is able to walk about the hospital garden unsupported. He takes at present five grains of quinine twice a day as a tonic, and fifteen drops twice a day of the tincture of the muriate of iron.

The patient has been a very short time in India, and never enjoyed very good health in it. He returns this year to England.

III.—*A Case of Heat Fever, followed by Sun-stroke, with Insensibility; Treatment, and Recovery.*—Private Donald M'K—, age twenty-five, a strong and well-developed young man, of very temperate habits, was admitted into hospital about 11 o'clock, a.m., on the 11th July, 1865. He had returned from guard, was dismissed, and went to his barrack-room, from which he was carried to hospital, suffering from fever. On admission, he stated that for the last five or six hours he had not felt quite well, and that he had some pain in the pit of the stomach, and in his head, but thought it would pass off. It, however, increased, and when he came in, his skin was perfectly dry, and extremely hot. Head burning, heart's action and pulse very strong, and intellect not by any means clear. His clothes were immediately removed; he was carried on a low cot to the verandah, and the cold douche was given to him, which soon got down the temperature of his body, and he declared himself much better. Diaphoretic mixture was ordered for him every second hour, and he remained in a quiet but rather drowsy state for the day. His skin did not become very hot again, at least up to 4 o'clock, and about that time he fell asleep. About 6.30, p.m., he was noticed by the man lying in the next bed to him to make some convulsive movements, and efforts to get out of bed. Very shortly after this I saw him, and found him in the following condition:—Quite insensible; unable to answer any questions, or notice any object drawn across his vision; his skin perfectly dry, and temperature of the surface of body and head extremely high; heart's

action strong, and pulse full, but easily compressed; slight suffusion of the eye, but nothing remarkable about the condition of the pupil—it was immovable, and directed straight forward; he moaned occasionally, and was restless, but had no convulsions. The stream of cold water from a height was commenced the moment his clothes were got off, and that he was placed in the verandah. A strong purgative enema was given, which quickly acted, and carried away a large quantity of very dark and offensive matter; and a sinapism was placed over his stomach.

He continued in this unconscious state until a little after 9, p.m., when he showed some symptoms of recovery. From the time I first saw him, about 7.15, p.m., until this, the stream of cold water over his head and body was almost constant, in consequence of the persistent heat of surface, and as his heart's action and pulse indicated its continuance. He had, during these two hours at least, thirty bheesties' mussacks of water poured over him, each holding about ten gallons. He now noticed objects before him, turned on his side, felt if pinched or if tickled in the soles of the feet, and looked vacantly; when asked questions tried to answer, but could not.

The temperature of his skin went down, and after a little he became slightly cold, so as to require light clothing over him. When put to bed consciousness gradually returned, and by 10.30, p.m., he was able to answer some of the questions put to him, but knew nothing of what had been going on for the last three hours. His head now became a little hot again, and the conjunctivæ became more suffused. I had the scalp shaved, and a blister applied. From the moment he was able to swallow, carbonate of ammonia in five grain doses was given every hour. He remained in a quiet, listless state for the night, but did not sleep much.

July 12th.—Says he feels weary and fatigued this morning, but suffers no pain; has a peculiar uneasy feel about the stomach. General surface warm, not *hot;* skin not acting. A sinapism to be applied to the stomach. Carbonate of ammonia mixture to be continued, and the douche to be repeated should great heat of skin come on during the day. About 11 o'clock feverish symptoms presented themselves, and the cold douche was repeated with relief. I saw him about 5.30, p.m.; he was then very hot, with a dry skin, and intellect very dull, eyes suffused. The douche was again resorted to with benefit, and his skin began to perspire after it. About 8, p.m., his head only increased in heat; three leeches were

applied to each temple, and after them he was much better. Carbonate of ammonia mixture was continued through the night. He rested quietly, but did not sleep.

13th.—He feels weary, but has no pain; skin moist, not very hot; pulse weak. I ordered a glass of wine, and that the ammonia mixture should be continued.

14th.—Says he feels easier, but did not sleep last night. Complains of dizziness and weakness; bowels not moved since the night of the 11th, but he has consumed no solid food. Ten drops of tincture of opium to be added to each dose of ammonia mixture, to give him sleep. Continue wine.

15th.—His bowels were moved. He slept a little last night, and says he feels quite at ease this morning, but there is dulness of intellect, and some hesitation in answering questions. Continue mixture and wine.

Evening.—He had some sleep during the day, but wanders a good deal this evening. He imagines he sees strange objects, and is restless; head a little hot; pulse slightly accelerated, 86. Blister on the scalp to be kept open; another to be put behind the right ear, and tincture of opium to be discontinued in the mixture.

16th.—He was a little restless through the night; he got out of bed twice. He is in a listless, drowsy state this morning, and requires to be roused to answer questions, many of which he answers correctly, and then lapses off into some strange ideas; one is, that he sees himself built up, and he is soon to be complete; another, that he is hunting in Australia. His pulse is quiet, tongue clean, head not hot, skin perspiring, bowels acting. The blister on scalp has healed; another to be put behind the left ear, and the right kept open. Continue the ammonia mixture, and ℞. camph. gr. ii.; ext. assafetida gr. ii. Ft. pil. one three times a day.

17th.—His mind is a little clearer this morning; he answers questions better, but he is not yet well. He suffers no pain, his pulse is quiet, and skin is acting freely. Blisters behind the ears to be kept open, and mixture and pills continued.

20th.—He is much improved, sleeps well, and his intellect is now quite clear. He has no pain anywhere, and all his organs are acting regularly. Omit pills. To have five grains of quinine, twice a day, as a tonic, and to continue the ammonia mixture.

26th.—He is going on very well, and gaining strength gradually. All his internal organs working regularly. Continue quinine.

August 3rd.—Is quite convalescent now; able to walk about, and feeling strong.

7th.—Discharged from the hospital quite well.

IV.—*A Case of Heat Fever, with Partial Insensibility, strongly simulating Sun-stroke, and followed by Head Symptoms; Treatment; Recovery.*—Private James M'B—, aged twenty-eight, a tall man of delicate frame, who has been in India for the last seven years and ten months, was carried to hospital about two o'clock, on the 11th July, 1865, with the following symptoms:—He was in a drowsy, listless, semi-unconscious state, not able to speak or notice anything, until first roused; the head and general surface of the body extremely hot, and perfectly dry to the touch. When asked, he complained of great pain in pit of his stomach, and a giddy, uneasy sensation in the head; his eyes looked drowsy, but there was no injection of the conjunctivæ; the heart's action and pulse were weak.

The cold douche, before described, was immediately resorted to, and, after about ten minutes, restored him to his senses, and reduced the temperature of his skin. He was then put to bed, but still complained of an uneasy sensation about the stomach, for which a mustard sinapism was applied with relief, and carbonate of ammonia, in five grain doses, was commenced as a stimulant. The heat gradually returned to his body, and became very great; at 4 o'clock it was necessary to repeat the douche again; soon after this he complained of pain in the head for the first time, and the conjunctivæ became slightly congested. Six leeches were applied to the temples, which partially relieved the pain; but later in the evening he became very dull and heavy, and raved; his head was then shaved, and blisters were applied behind the ears; the carbonate of ammonia was continued every hour. About 8 p.m. his pulse and heart's action became weaker, and his body generally was then rather cold; he had also a rigor at this time. I then thought it advisable to give him a little warm brandy and water, and had sinapisms placed over his stomach, and to the calves of his legs; his pulse, and the temperature of his body then rose; he rested quietly for the night, and had some sleep.

July 12th.—Says he feels very weary and fatigued this morning, but his intellect is clear, and he is able to answer all questions put to him, but his speech is thick and slow. The history he gives of himself for yesterday is as follows:—About 7 a.m., after morning

parade, he went to the Bazaar, half-a-mile distant, to buy some things; he did not drink anything while there, and was back at 8.15, up to which hour the sun is not very strong; he ate some breakfast at 8.30, and after that was not out of his barrack-room until carried to hospital in a doolie. The first symptoms, he says, he had were pain in the pit of the stomach, and giddiness or lightness of the head. He has a very indistinct recollection this morning of anything that occurred for some hours after his admission into hospital yesterday. He still complains of uneasiness about the stomach, and giddiness of the head. His skin is not acting, and is warm. Pulse and heart's action are still weak. A mustard sinapism to his stomach, the body to be sponged, and diaphoretic mixture, with carbonate of ammonia, to be taken every second hour.

13th.—He is better. The skin is beginning to act, and the uneasiness about the stomach is partially relieved; the head is still very giddy, and speech rather thick. The blisters to be kept open with savine dressing, and the mixture to be continued.

15th.—There is some improvement; his skin is now acting freely; his bowels are quite regular; the uneasiness about the stomach is much better, but his head is yet very giddy, and he is extremely weak. The mixture, beef-tea, and wine to be continued.

20th.—The patient is much improved; he is now able to be out of bed, and can move about without any support; complains only of swimming in the head, and general weakness. Taking quinine twice a day, and the former mixture, with good diet, and a moderate allowance of wine.

He continues to improve in strength and firmness, and was out of hospital, on the convalescent list, by the 25th.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Practical Treatise on the Diseases and Infirmities of Advanced Life. By DANIEL MACLACHLAN, M.D. London: John Churchill & Sons. 1863. 8vo, pp. 718.

THE work before us is the result of the experience and observation of one who occupied, during nearly a quarter of a century, an admirable position for studying the diseases and infirmities of the aged; who, in the capacity of physician and senior medical officer of Chelsea Hospital, had upwards of five hundred aged people constantly under his eye, nearly all of them being invalids in the strictest sense, very few below 55 years of age, and most of them varying from 60 to 90 and upwards; and who had from among this number always between 60 and 70, more frequently between 70 and 80 cases actually under medical treatment.

The first or introductory chapter is devoted to the consideration of the anatomy, physiology, and psychology of advanced life; then of the general principles, and the remedial and preventive treatment of the affections incident to age; and finally, of climacteric disease, decay of nature, or breaking up of the constitution.

With regard to the several stages into which the life of man is divided, there is not much room for difference of opinion among physiologists, or pathologists, except as to the exact points through which are to be drawn the lines which separate infancy from youth, youth from maturity, maturity from age. Much ingenuity and refinement have been employed in endeavouring to define the position of these lines of demarcation, but the question for consideration in the chapter before us is limited to one of these stages or periods only, and may be thus defined:—"At what period does advanced life or old age begin, and what are the indications of its commencement?" We quite agree with the author that a candid examination of this question, viewed purely in a medical aspect, is not unattended with many difficulties. Advanced life and old age are relative terms scarcely measureable by length of years. Maturity

slowly and insensibly glides into decline, so that the line of demarcation is imperceptible, and the distinction between these epochs entirely arbitrary, until nutritive and functional inactivity, with structural changes, reveal the degeneration which tyrant time effects in the different organs and tissues. At 45 or 50 many men begin to show indubitable signs of physical decay, though apparently in excellent health, while others, and not a few, more favoured, are vigorous and active at 70. Original conformation, hereditary weakness of the organism and constitution, climate, pernicious habits, anxieties, the privations, disappointments, and heart-burnings incident to particular professions, positions in life and temperaments, tell on the human frame, and occasionally manifest their influence at comparatively early periods. The soldier who has completed one or two-and-twenty years' service in the ranks, and who has not reached the age of 40, deprived of natural rest, leading a monotonous life, and breathing the tainted air of a crowded barrack room, already shows in his wan and withered countenance, and by his failing strength and activity, the tear and wear of his constitution. Artizans, similarly circumstanced, evince the same indications of physical decay, while as yet young in years; and hardly a day passes without the observer meeting old men at 50, and decrepitude at 60. This is not, however, the ordinary course of nature, but a premature old age and decay, hastened and flowing from one or more of the causes now hinted at. The discharged soldier regains the freshness and bloom of manhood, and the lawyer, the official, or merchant, enjoying an easy and dignified retirement, loses, with his anxieties, cares and responsibilities, the mien so well known, that bespeaks the commencing return of the body to the earth which gave it.

Having treated very fully, in the next part of this chapter, of the somatic modifications and changes, physiological and physical, which characterise the advance of life, the author proceeds to consider the state of the moral and intellectual faculties. If the aged lose their corporeal vigour and activity, and are exposed to many infirmities which afflict the body and rob it of some of the pleasures of other years, the understanding and the higher powers of the mind, up to a certain epoch at least, and often to the very latest period allotted to the life of man, preserve, if they do not actually acquire, increased energy and precision. More slow in reaching maturity, reason and judgment have scarcely attained their highest development before the signs of bodily decay appear. Advanced life, and

consequent decay of the organism, are not necessarily productive of, or accompanied by, inactivity of the mind—dotage or decline of the intellectual faculties. These are the last to yield under the pressure of years, and, as relates to the body, the inexorable law of nature.

In speaking of the duration of human life, the author takes occasion to direct attention to a remarkable fact which has not been sufficiently recognised, namely, the extreme rarity of death from sheer old age. The mortality tables, published under the direction of the Registrar-General, would appear to tell a very different story, and the explanation of this is furnished by the fact that in very numerous instances of deaths occurring *in* old age, the morbid processes which have brought about the fatal result were so obscure in their nature, and attended by symptoms so unlike to those intense and strongly-marked manifestations which are wont to characterise the presence of disease in the earlier periods of adult life, that their operations were unperceived in some cases, while in others they were interpreted rather as the exponents of a natural process of decay; and in this way such terms as atrophy, senile decay, asthenia, and old age, have come to be very often erroneously assigned as the "cause" of death in medical returns. In the second chapter the author gives us an abstract of the results of his investigations into the causes of death in all the cases which occurred in Chelsea Hospital during the thirteen years ending with 1859. Out of a total number of 845 deaths, exclusive of sudden deaths investigated by a coroner's inquest, occurring among the in-pensioners whose ages varied from 50 to 90, the immense majority exceeding 60; and in all of which the greatest pains were taken to return the true cause of death, the diagnosis having been verified in every doubtful case by *post mortem* examination, the several diseases are reported to have been present in the following proportions:—Bronchitis was the cause of death in 166 cases; phthisis pulmonalis in 145; apoplexy, 58; pneumonia, 51; cancer, including scirrhus, of different internal organs, 47; diarrhea, 36; empyema, 27; hemiplegia, 25; pericarditis, 24; cholera, 23; softening of the brain, 21; diseases of the heart, hypertrophy, dilatation and valvular lesions, 21; albuminuria, 17; diseases of the bladder, cystorrhœa, &c., 17; general paralysis, 11; dry gangrene, 10; paraplegia, 7; erysipelas, 7; sloughing of the nates, 7; purpura and scurvy, 5; "old age, 3; all 82 years old. Including two cases of death by angina pectoris, and one by gout, the remainder are scattered; but these constitute the

chief numbers. The reader will not fail to remark the large number of phthisical cases."

The total or partial exemption of the aged from many diseases which prevail in earlier life forms the subject of some interesting remarks, in the course of which it is stated that "strumous and tubercular affections, with the exception of consumption itself, which, as we have just seen, is far from uncommon, are comparatively rare." We cannot say that we coincide with the author in this opinion, our experience being rather in favour of the belief that strumous disease affecting the joints and the glands, as well as that condition which may be denominated strumous cachexia, is by no means rarely met with after the age of fifty-five years; in fact, we can call to mind very numerous instances in which we have met with the most decided manifestations of strumous disease among the aged and infirm, exclusive of cases of pulmonary tubercle.

That the author has studied well and considered carefully the principles upon which the medical treatment of the aged should be conducted, is evident from the judicious tone of his remarks on the principal remedies. The young and inexperienced practitioner is reminded of the importance of paying due attention to other circumstances than the mere number of years his patient may have attained, inasmuch as this in itself does not constitute old age; on the contrary, he must weigh a number of circumstances, which no arrangement of figures can represent—circumstances relating to constitution and habits, amount of vital power, persistence of depressing or debilitating agencies, hereditary or family peculiarities, and so on. The decline of the vital powers, whether it take place at an early or a late period, and the degeneration of the tissues which accompanies and attests this condition of decadence, materially influence the indications of treatment and modify the effect of medicines, which, as a general rule, become less certain in their immediate operation, and less efficacious in their specific qualities or ultimate effects, as old age advances. The following remedies, which are among the more important which are employed in the treatment of disease, are reviewed by the author with reference to their adaptation to the aged. We append a brief abstract of his observations.

With regard to bloodletting, Dr. Maclachlan is rather disposed to consider that old age, *per se*, should not deter us from employing this valuable remedy. He thinks the principle of trusting to the expectant method of treatment is often carried to a dangerous extent,

and that those persons are in error who allege that the constitution of old people, and their intolerance of bleeding, assimilate with the condition of early infancy; for while, in the first stages of life venesection cannot be resorted to with safety, and must give place to local bloodletting; in the other extreme, if not carried to excess, it is well borne when the great functions of life are still performed with a certain degree of vigour, and the heart retains its normal condition. The authorities who are quoted as favourable to the views above stated are numerous and valuable; while amongst those who have maintained an opposite opinion, not a few names of eminence are enrolled. The author concludes with the following judicious remarks:—

"Amid so much rashness on the one hand, and extreme caution or timidity on the other, the question naturally occurs, what should be regarded as the safest indication for bleeding in old age? and, as a corollary to this question, what are the circumstances that ought to forbid it? Bleeding may be generally employed when the danger or urgency of the symptoms call for it—when the individual, however far advanced in years, still possesses some of the attributes of maturity, the pulse at the wrist and in the other larger arteries being firm and equable, the action of the heart regular, and the constitution, though perchance debilitated by natural decay, unbroken by pre-existing chronic disease. General bleeding is contra-indicated when the pulse is irregular in strength and frequency, but more especially in the former state; when the impulse of the heart is feeble and intermittent, and its sounds obscure and inaudible; and in all cases where the general health has suffered from privations, insufficient nourishment, or long-continued exhausting maladies. In practice, the cases in reality are comparatively few in which the abstraction of blood from the arm more than once or twice is necessary. . . . In considering the expediency of a first or second bleeding, the practitioner should not be deceived by the hardness of the pulse at the wrist in the old, which, as Bizot has pointed out, is often stronger in them than in the young, owing to the radial artery preserving a sound condition, and thus receiving the entire force of the heart's action, which is partly spent in dilating the whole system of arterial tubes, when all possess their normal elasticity before the changes effected by age occur in them. The action and impulse of the heart itself are safer guides than the pulse at the wrist; and we hardly ever bleed old people by the lancet without first laying our hand on the cardiac region, and, if need be, applying the ear to the chest."

The author has found purgatives in many cases to be a most

valuable substitute for bleeding; they are, however, less immediate in their results; but if too active, or too frequently repeated, they are apt to depress the vital powers even more than a moderate depletion by the lancet. With a view of relieving the bowels speedily without exhausting, a combination of a few grains of calomel with the compound extract of colocynth is recommended. In cases of bronchitis attended with sudden clogging of the lungs, congestion, œdema and suppressed or inefficient expectoration, "we know of no purgative, indeed of no remedy, so useful as the pulvis jalapæ compositus. These most distressing cases, with universal moist râles and great accumulation in the bronchi, intense dyspnea and lividity of the face—symptoms betokening suffocation—are often singularly relieved by means of this remedy. It not only procures copious serous motions, but also acts on the kidneys, and promotes absorption." To say the truth, we prefer to treat those cases of suffocative catarrh by a less depressing method, namely, by exhibiting, in the first instance, a *full* emetic of mustard, with carbonate of ammonia, which speedily unloads the respiratory tubes; afterwards by diffusible stimulants, and in the meantime to keep up a moderate counter-irritation by means of turpentine applied not only to the thoracic surface, but also to the legs and feet. We quite agree as to the great value of cathartics in the apoplectic and comatose affections of advanced life, as well as in temporary attacks of senile insanity. Mercury is considered "as uncertain in its operation and effects, and not without more or less inconvenience, or even danger, when given for some time in repeated doses to the aged. As a purgative, calomel is a safe and most valuable remedy at this period of life; but as an alterative, mercury, in any form, is hazardous. When exhibited in this manner its effects should be carefully watched, for it is frequently difficult or impossible to foresee them."

The tartrate of antimony, when employed as a counter-stimulant, so as to maintain nausea and diminish the strength and frequency of the pulse, is looked upon by the author as a dangerous remedy in the old; but he does not apprehend that injuriously depressing effects will attend the administration of pulvis Jacobi verus, from which, in combination with small and regulated doses of calomel, much benefit has been found to arise in many inflammatory affections. In cases where we are desirous of reducing the pulse without more direct means, ipecacuanha is recommended as being preferable to the tartrate of antimony.

Emetics are admitted to be occasionally advantageous in some

bronchial affections in which the respiratory tubes are loaded with viscid secretion; also to be appropriate remedies in cases of gastric derangement from the presence of excess of undigested food. Their employment, however, in either of these classes of affections is not spoken of in very strong or glowing terms of recommendation.

Opium requires to be prescribed with caution in aged and debilitated subjects. Although, generally speaking, the diseases of advanced life are not accompanied with acute suffering of a nature to be relieved by opiates in unusual quantity, there are, nevertheless, many cases in which pain is a prominent symptom, and in which the continuance of excruciating torture becomes attended with a gradually-increasing tolerance of narcotic drugs. Such cases, however, must be looked upon as exceptional; and it were well to bear in mind, as a general rule, that "nothing but the most urgent necessity ought to induce the practitioner to exceed ordinary doses of half a grain or a single grain, wherever, through natural causes, the powers of life are perceptibly declining, and a state of exhaustion has been brought about by persisting chronic disease."

Remedies of the diuretic class are of necessity often resorted to in the diseases of advanced life, owing to the frequency of dropsy in one form or other, either as an attendant or a sequela of the numerous maladies that assail the aged. When the skin is altered in its structure with advancing years, and unperspirable, they take the place of diaphoretics, which often fail in their object. Free action of the kidneys has also a powerful effect in relieving the lungs and brain; and in heart disease, with its many complications, diuretics are sometimes of great benefit. Nitrate of potash is highly spoken of, but not in large doses; also the acetate of the same base. The author combines one or other of these salts, or both, with solution of acetate of ammonia and sweet spirit of nitre, allowing at the same time a moderate quantity of gin and water where a stimulant is necessary. Digitalis has been found to be "a truly valuable medicine. Where there is no sign of fatty degeneration of the heart, or where the heart's action is not feeble and fluttering, it may usually be given with perfect safety, even when the pulse is intermittent—a symptom which sometimes disappears under its influence."

Considerable diversity of opinion exists as to the safety and utility of administering colchicum to persons of advanced age, whether the effect intended to be produced be diuretic, antiphlogistic, or antilithic. "Like other powerful remedies, its operation

requires watching. A careful and judicious administration of it, in moderate or medium doses, is occasionally attended by the best effects in the very decline of life. It may in this manner be given to nonagenarians without any apprehension; but as it is one of those medicines that accumulate in the system it should occasionally be intermitted when it is considered expedient to discontinue its administration for a length of time; and in all cases, immediately it is observed to affect the pulse or attack the bowels, it should at once be omitted. The best guide to its safety is the precise condition of the heart."

Squill, and its preparations, long used as diuretics and expectorants, are highly esteemed by the author in senile affections. He does not omit to notice an inconvenience which attends the prolonged administration of this valuable drug in some cases, and which is a serious impediment to its use—namely, an impairment of the tone of the stomach, evinced by a failure of appetite and a tendency to nausea. A similar drawback to the use of digitalis has also been noticed.

Amongst the tonics the practitioner has generally a pretty wide range of choice, where medicines of this class are indicated; and truly they are found of service in some stage of almost every disease at every period of life. The combination of aromatics and carminatives with vegetable bitters is a matter of importance to be attended to in many of the affections of old age. Quina is of less value here than in earlier life. Minerals, such as the acids, and some of the preparations of zinc and iron, have been frequently found to be of service. Arsenic is not so strongly recommended.

"Extreme caution" should attend the administration of hydrocyanic acid to the aged. "It has often been a matter of surprise how old people ever get over the large doses of this most potent remedy which certain practitioners appear to be in the habit of prescribing with a recklessness that betokens profound ignorance of its depressing influence on the nervous system, and its extreme danger."

Strychnia and veratria also, and other alkaloids of this kind are spoken of with similar reserve as to the safety and propriety of their administration.

Among the safe and more useful remedies in constant requisition are enumerated those of the revulsive class, such as sinapisms and turpentine epithems. Lastly, balamsic substances are most favourably spoken of as extremely beneficial, especially in catarrhal

affections, not only of the genito-urinary but of the pulmonary mucous surface.

The concluding section of the second chapter is devoted to a consideration of the hygiène of the aged, and presents a clear and concise abstract of the principles on which our sanitary directions should be based.

The next chapter treats of climacteric disease, decay of nature, or the breaking up of the constitution—a disease whose existence has been denied by some. while its frequency and importance are said to have been exaggerated by others—a disease which was regarded by Sir Henry Halford as solely one of advanced life, occurring with the changes in the system in age so very irregularly that it might occasionally be remarked at any time between fifty and seventy-five years of age—an affection which, according to the views of Dr. H. Kennedy, of this city, "is by no means unfrequently met with in individuals between twenty and thirty years of age." In general terms, the state of things to which Sir H. Halford (in his valuable essay in the fourth volume of the *Trans. Coll. Phys., London*, for the year 1813) first applied the term "climacteric disease," may be considered as a "rapid decay of the system more closely resembling morbid action than the almost imperceptible and silent changes of a physiological nature effected in the economy by the progress of years." Our author's own opinion is that the disease in question is rarely met with as an idiopathic or distinct affection. "Many years ago," he writes, "imbued by the description given of it by Sir Henry Halford, I imagined that I had met with it in numerous instances, but I soon found that in those cases terminating fatally, and which I had set down in my own mind as climacteric decay or disease, death was the result of some latent affection of long standing, hidden from observation by the absence of its ordinary symptoms, the most frequent being tubercular disease of the lungs, organic disease of the liver, or cancer of one or more of the internal organs. And in cases terminating favourably, recovery took place after the subsidence of a coexisting malady, such as a dyspeptic, bronchitic, or gouty attack. It is the engrafting of some malady on the senile constitution, premature or delayed, that forms a part, and no unimportant part, of the disease. I am satisfied that, until of late years, granular degeneration of the kidney, occurring in elderly people, without anasarca, must have frequently been put down as climacteric decay."

Reference is frequently made throughout this chapter to the paper of Sir Henry Halford, from which the author extracts freely; numerous passages also are quoted from the valuable monograph of Dr. Henry Kennedy on the same subject, which communication was printed in the twenty-fifth volume of the *Dublin Journal of Medical Science*, former series (1844). This writer has entered more minutely into the history of the disease, but in the main his views coincide with those of the former as respects its usual gradual mode of invasion, the character of the symptoms, diagnosis, and treatment. We conclude our notice of this part of the work by inserting the following passage, which occurs in a letter to Sir John Sinclair, by Professor Waterhouse, of the University of Cambridge, U.S. It is inserted by Dr Maclachlan in order to record the fact that about six years before the appearance of Sir H. Halford's essay already referred to—namely, in the year 1807, the period and symptoms of "climacteric disease or decay" were clearly pointed out by the writer above named:—

"There are certain periods of life, if I mistake not, which are scarcely noticed by medical writers—viz., about the age of thirty-six, when the lean man becomes fatter, and the fat man leaner. Another, between the years of 43, 44, and 50, when his appetite fails, his complexion fades, and when his tongue is apt to be furred on the least exertion of body or mind. At this period his muscles become flabby, his joints weak, his spirits droop, and his sleep is imperfect and unrefreshing. After suffering under these complaints a year, or perhaps two, he starts afresh with renewed vigour, and goes on to 61 or 62, when a similar change takes place, but with aggravated symptoms. During the natural change that takes place between 43 and 50, no particular organ suffers, but a gradual and uniform *deterioration* supervenes. At this time he first experiences a reluctancy to stoop, he prefers a carriage to riding on horseback, and he finds himself more affected by changes of the weather. He nevertheless commonly passes through this kind of '*moulting*,' and regains his health, with a little diminution of muscular strength, until he turns 60; then the gravity of age is more strongly marked, and he begins to boast of his age and its prerogatives. This is the result of my observations on others, compared with my own personal experience."[a]

The next portion of the work treats of diseases of the nervous system, according to the following arrangement: commencing with some introductory remarks on the anatomical characters of the

[a] Code of Health and Longevity, Vol. i., p. 33.

nervous centres and their investments, and general observations on diseases of this part of the organism in advanced life; the author then proceeds to take up the following affections in succession, viz., meningitis; hydrocephalus, and cerebral œdema; vertigo; epilepsy; apoplexy; meningeal apoplexy; softening of the brain; hemiplegia and paraplegia; paralysis agitans.

In the chapter on meningitis, we find some useful and practical remarks on the acute form of this disease—an affection which is too often looked on as belonging exclusively, or at least principally, to early life, but one which is really of very frequent occurrence in the aged. The important error of allowing it to be confounded with, or mistaken for, some of the forms of low fever is clearly and forcibly shown—an error which is apt to be committed by a young practitioner, who might easily be led astray in his diagnosis by the absence of intensity, which characterises the early symptoms, as well as the insiduous mode in which the disease commences. The whole description of the symptoms of the affection in question, and its diagnosis from typhus, evince the most careful clinical observation on the part of the author. With respect to the cause of acute meningitis, setting aside those of a mechanical nature, such as injuries of the head, diseases of the bones, and morbid growths, Dr. Maclachlan is disposed to attribute the origin of the affection, in the great majority of cases occurring amongst old persons, to one or other of these three sources—rheumatism, gout, or albuminuria.

The reader will find an account of the treatment in the following extract:—

"*Treatment.*—It very rarely happens that the symptoms of the disease are of so intense a character as to demand general bleeding, but in vigorous constitutions this measure is sometimes necessary, and venesection may then be employed with benefit. In illustration of this, I may mention the case of an in-pensioner of Chelsea Hospital, sixty-eight years of age, muscular, thick-set, and healthy, who was admitted into the infirmary thereof in the summer of 1855 with all the symptoms of meningitis, accompanied with high mental excitement, flushing of the face, brightness and restlessness of the eyes, heat of the scalp, perpetual loud talking with laughter; incessant efforts to get out of bed; occasional rigid extension of the index finger and contraction of the forearm, particularly strong on attempting to bleed or control him. These symptoms had set in the preceding evening. His pulse was quick and full, the tongue clean. Bleeding was performed to the extent of sixteen ounces, the blood flowing in a lage, remarkably florid stream, with but slight

impression on the action of the heart. It had, however, the effect of subduing the mental excitement and reducing the redness of the face. A few hours afterwards he was much more rational, less talkative, and the pulse had fallen from 120 to 100. Now, as yet, his bowels had not been opened, and the only medicine given him was the sulphate of magnesia in the infusion of senna, so that the improvement was justly due to bleeding. On the following day he was still better, though suffering from frontal headache, with suffusion of the eyes, &c. The disease pursued a mild course, and the man perfectly recovered. It is more than likely that in this case the inflammation of the membranes was associated with inflammation of the periphery of the brain from the commencement. Of the existence of phrenitis, in the common acceptation of the term, none of the medical officers had ever any doubt.

"The examples, however, n which bleeding from the arm is obviously necessary and expedient, are nevertheless few in comparison to those in which such a proceeding would be improper; for though at the onset the prostration accompanying the disease is often more apparent than real, but a short time elapses before the symptoms assume a character to forbid active treatment. In by far the greater majority of cases, local must be substituted for general blood-letting, even at an early period of the disease; and in its advanced stages, opening a vein would hasten a fatal termination. Except in such an instance as I have alluded to, attended by high cerebral excitement and vascular action, local blood-letting is not only infinitely more safe, but more beneficial, and it can be repeated from time to time, as the nature of the symptoms may indicate, while general blood-letting can very rarely be resorted to more than once, and that only at the commencement of the attack. The beneficial effects of local blood-letting may be greatly aided by position, and the constant application of cold to the head.

"No time should be lost in opening the bowels. Four or five grains of the compound extract of colocynth, with two or three grains of calomel, should be given, and followed up in a few hours, in uncomplicated cases, with salts and senna. In feeble, emaciated, or exhausted habits, care should be taken not to act too sharply; but, where purging can be borne, the saline aperients are of great service. Mercury appears to have a beneficial influence in arresting the progress of the disease, and averting its consequences in uncomplicated attacks, not dependent on gout or granular degeneration of the kidneys. A grain or two of calomel should be administered every two or four hours, and the mouth, if possible, very gently touched. Where local bleeding is not repeated, the calomel may be conjoined with James's Powder, or fractional doses of tartar emetic. Sufficient care must be taken not to depress the vital powers below a just relation with the activity and nature of the existing symptoms. Having this in view, it will also in general be advisable to allow a fair proportion

of nutriment, milk, strong beef-tea, sago, &c., from the beginning. Although light and noise may not disturb the patient, the room should be darkened and quiet maintained.

"When the more active symptoms are subdued, and stupor has succeeded excitement, a blister should be placed on the nape of the neck, and the raw surface afterwards dressed with blue ointment. Blistering ought invariably to be delayed till the period of active excitement has ceased or abated. Cold should still be continued to the head, alterative doses of calomel or blue pill administered, the bowels regulated, and the strength supported by mild unstimulating nutriment. During convalescence, and in certain cases characterised by nervous irritability, sedatives, especially henbane, or even the muriate of morphia, may be prescribed with great benefit.

"In the secondary forms of the disease succeeding albuminuria, our chief resources are, leeches to the mastoid processes, cold to the scalp, and blisters to the nape of the neck. Mercury is then of little or no avail; indeed it is prejudicial. When the disease accompanies or follows gout or rheumatism, very similar measures are required; in addition to which we should endeavour to maintain or elicit the original affection by mustard cataplasms and tepid pediluvia, while at the same time the poison itself should be destroyed or its formation prevented by the internal exhibition of colchicum with alkalies."

We shall not dwell on the remaining chapters of this part of the work, but pass on to the next, having for its subject matter the consideration of the principal diseases which affect the respiratory organs.

The author commences by giving a brief account of the important changes of structure and modifications of form, which in the advanced stages of life are found to occur in these organs, and in the walls which enclose them. Commencing with the larynx, whose greatly enlarged cavity, increasing rigidity of cartilages, and pale and flabby condition of vocal muscles, are alluded to; the state of the trachea is next noticed as one of dilatation and ossification, although the former condition is not so common here as in the larynx; Rokitansky, however, says that it always occurs with senile marasmus of the lungs, and is more or less proportional to it. The great prevalence of an abundant secretion from the pulmonary mucous membrane, which has been specially noticed by MM. Hourmann and Dechambre, as the habitual physiological condition in the aged, Dr. Maclachlan has found to be frequently absent, even in octogenarians. The most important changes which take place in the lungs themselves have been long since described with the most

careful minuteness by Lænnec, the accuracy of whose account has been confirmed by the researches of MM. Hourmann and Dechambre, published in the *Archives Gen. de Med.*, for August, 1835; while on those researches is based Rokitansky's account of the anatomical characters of the thorax and lungs of the aged. Frequent reference is made in the present work to the writings of the several authors just named.

In connexion with the physical signs, whose consideration immediately precedes that of the special diseases of the respiratory system, the author very judiciously reminds us that—

"While in young children the respiratory movements are chiefly executed by the diaphragm, and in adults equally by the intercostal muscles and diaphragm, in old age they are mainly effected by that muscle. And while the enlargement of the chest during inspiration takes place in every direction in the adult, this enlargement is chiefly vertical in the aged, by reason of the anatomical changes in the bony walls of the cavity, which almost entirely prevent expansion in the lateral and antero-posterior diameter. Excluding cases in which the respirations are either remarkably slow or remarkably frequent, the average number of respirations may be stated to be twenty-one or twenty-two in a minute in healthy subjects above sixty years of age. In adults they are rather under that number. Their rhythm, according to Dr. Sibson,[a] in the perfectly tranquil breathing of adults is equal, or as 6 to 6; but, in old age, he states, expiration is prolonged, and inspiration is to expiration as 6 to 8 or 9. The inspiratory movements in the aged are frequently interrupted, or jerking, resembling successive sighs, as if the air, in expanding the lungs or enlarging the chest, met with so many obstacles in its course. This variety of breathing is often seen in perfectly healthy elderly people, though more frequently in diseased subjects, and is a not uncommon attendant in senile pneumonia. So marked is it at times, even in health, that a casual observer can hardly escape noticing it."

The special affections treated of in the succeeding chapters of this part of the work are:—Acute bronchitis; chronic bronchitis, catarrhus senilis, chronic catarrh, or Winter cough; bronchorrhea, pituitous catarrh, pituitous phthisis, catarrhal phthisis, bronchial flux; pneumonia; chronic pneumonia; pleuritis; phthisis pulmonalis, including the acute, the latent, and the chronic forms; and lastly, asthma.

[a] M. C. Trans., Vol. xxxi., p. 378.

The chapter on pneumonia is remarkably full. Speaking of the frequency of its occurrence, Dr. Maclachlan observes that—

"Of the inflammatory diseases affecting the respiratory organs, the frequency of pneumonia at advanced epochs of life is only exceeded by bronchitis, of which it is very often a consequence; and of all acute diseases, with this exception, and excluding also, as sometimes rapidly fatal, apoplexy and palsy, it is that which destroys the greatest number of old people. Often insidious in its origin and progress, it is occasionally altogether latent, and death is not unfrequently attributed to other causes in old age when pneumonia has chiefly or entirely occasioned it. Pneumonia carried off in England and Wales in the seven years 1848–54 no fewer than 24,572 persons, male and female, of forty-five years of age and upwards, the mortality increasing with age. In a *population* of 539 old men in Chelsea Hospital, whose age varied from fifty-five to ninety-five and upwards, it was the undoubted cause of death of 48 of that number, during the fourteen years ending 1859. 'At the Bicêtre, from 1832 till 1835, pneumonia formed very nearly a ninth part of the cases treated in the wards of that hospital, and about a sixth of the deaths observed in the same period.'[a] 'I believe I speak the truth,' says Cruveilhier, 'in affirming that five-sixths of our old women at the Salpêtrière die from pneumonia.'[b] Every circumstance connected with a disease of such frequency and fatality is therefore deserving consideration; and the immense importance of the subject will, in the estimation of most readers, be held as a sufficient reason for treating it here methodically, and as the only apology necessary for indulging in details some of which possess little value in the eye of the practical physician."

Adapting, to a certain extent, the excellent description of the anatomical characters of pneumonia which Lænnec has drawn, and the divisions into stages or degrees pointed out by this very accurate observer, our author directs attention to the modifications in the character of these different stages by reason of the rarefied condition of the lung in the aged, also its increased lightness, the dilatation and rupture of the air cells, and the presence and diffusion of carbonaceous matter through the pulmonary substance. These conditions, he observes, "modify the character of the different stages, sometimes in a remarkable degree, and specially affect the second and third stages of the disease, in a manner peculiarly distinguishing the red and grey hepatization of old age from the same stages in the adult, so that it is often as easy to point out the lung

[a] Prus. Mém. de l'Acad. de Med., Tome viii, p. 1.
[b] Anat. Path., Tome ii.

of an old person attacked with inflammation as it is to discriminate between the healthy lung of the different epochs of life." There are also some excellent practical remarks on the obscure and latent character which attacks of pneumonia very frequently possess in the aged, especially in cases where chronic disease of the brain, heart, or some other internal organ, has already existed.

With respect to the treatment of the primary sthenic, or most simple form of the disease, Dr. Maclachlan attaches much value to the abstraction of blood, under certain restrictions. He enters fully into this very important question, and sums up in the following words:—

"Although I have recommended bleeding in sthenic pneumonia occurring in vigorous constitutions, irrespective of age, still I feel bound to observe that the cases requiring and admitting it are in reality few. Occasionally a succession of cases occur in which bleeding appears to be imperatively demanded; but, on the other hand, still more frequently, we dare not bleed. Of late years these cases have been increasing. A low form of pneumonia, not exactly of an adynamic type, is more common than it used to be, and for one case now suited to bleeding, we meet with at least a dozen that would be injured by it. In the autumn of 1860, and winter of 1860–61, out of at least twenty cases, I have not once bled, or felt called upon to bleed. My views of the proximate nature of the disease are not changed. It is not here as in apoplexy, in the pathology of which our knowledge has greatly extended. I believe that if there is any disease more than another likely to be benefited by blood-letting, or which pathologically and physiologically suggests and warrants this measure more than another, it is acute sthenic pneumonia occurring in sound constitutions. Inflammatory diseases have changed their type, or the powers of the system are now-a-days less vigorous than formerly, and succumb more speedily, decidedly, and unresistingly, to loss of blood and active treatment. Thirty years ago and upwards, bleeding was the sheet-anchor in most inflammatory diseases, and in none more extensively and more successfully employed than in pneumonia; but disease has assumed a different character, and the attentive observer knows full well that, as Sydenham long ago pointed out, there are certain years and certain seasons in which active measures, and blood-letting in particular, can neither be had recourse to with benefit nor safety. We are now in this cycle or 'constitution.' It is protracted, and has long been oscillating, though seemingly ever advancing; and if it go on advancing, the present generation will live to see bleeding expunged from the list of remedies in this as in most other diseases. The next may see fit to revive it."

Emetics also are favourably spoken of; but the tartrate of

antimony, in large and repeated doses, is not recommended. The author, however, considers this preparation in doses of one-sixth or quarter grain to be of value as obviating the necessity of repeated venesection in sthenic attacks, and superseding this measure in cases of doubtful or less acute character. The addition of nitrate of potash to minute doses of the antimonial salt is recommended as a "safe, salutary antiphlogistic," owing to its calmative influence on the excited circulation, and its tendency to determine to the kidneys. Much value is attributed to mercurials in combination with opium, but "no more opium should be admitted into the combination than is sufficient to prevent the calomel from running off by the bowels." As a general rule, vesication over the site of the inflammation may be employed at an earlier period than in the adult; but in cases of associated bronchitis, occupying a great extent, turpentine epithems are recommended as more convenient and useful than blisters. The propriety of supporting the strength by appropriate nourishment throughout the progress of the case is strongly insisted on, as well as the necessity of allowing such an amount of vinous and other stimulants as signs of debility may indicate, the quantity being regulated by the previous habits of the patient.

The chapters on the remaining affections of the respiratory organs contain some valuable observations and suggestions, on which, however, we shall not now dwell, but pass on to examine the portion of the work which treats of diseases of the circulatory organs.

In the introductory chapter, in the course of some general anatomical considerations, the author remarks:—

"In numerous cases in old subjects I have found the base of the aorta and pulmonary artery externally just as they leave the heart, and sometimes for some little way upwards, minutely injected. The reflected portion of the pericardium has then appeared looser, the sub-cellular tissue relaxed, and the arteries and veins ramifying in it larger and more tortuous than natural. Hitherto I have been unable to connect this appearance with any particular mode of dying, though it has generally but not invariably presented itself in chronic pulmonary affections. It has never been accompanied with any local signs of inflammation, and it has always appeared to consist in a varicose enlargement of the vessels, ramifying in the cellular coat of the arteries in the situation stated. Occasionally, it is limited to either artery. More frequently, it shows itself around the commencement of the aorta alone. It is just possible

that it might be mistaken for inflammation of the cellular tunic of the vessel."

Ever since the time of Hunter, who first directed attention to the peculiarity of the valves at the right side of the heart, the competency of the tricuspid to discharge its functions has been recognized to depend on the incompleteness of its closure. For an ample confirmation of this anatomical fact, as announced by Hunter, we are indebted to the observations and experiments of Mr. Adams and Mr. T. W. King. The insufficiency of the valves of the right side is likewise regarded by Dr. Latham as an admirable provision, coming into frequent exercise in health, and absolutely required to prevent the gravest injuries, and even to guard the continuance of life. This peculiarity, although not confined to the old, is more remarkable in them. In speaking of the venous pulsations so often seen in aged patients, Dr. Maclachlan says:—

"Consequent to this imperfection, so to speak, of the tricuspid valves and the greater dilatation of this orifice in advanced life, pulsation of the jugular veins is more frequently seen then; and in many old emaciated subjects any undue excitement of the heart is productive of undulation of the veins above the clavicle, sometimes extending beyond that. Occasional distention and tremor of the jugular veins may thus be regarded in general as of less serious import in the aged. When the vibratory motion extends beyond the neck, when it reaches to the veins of the extremities, and is permanent, the dilatation of the tricuspid orifice is abnormal, and the evidence of disease of the right side of the heart conclusive. Venous congestion, if not already urgent, is at hand, and hemorrhage or dropsy not far distant. Tricuspid regurgitation is seldom accompanied with any murmur. Although mere hypertrophy of the heart may occasion undulation of the jugular veins, this is, nevertheless, the most direct sign of insufficiency of this valve, and, as might *à priori* be expected, the pulsation is more obvious on the right than on the left side. The veins here are often prominent and undulating, while those on the opposite side are not more than visible."

In the course of this same chapter we are furnished with a careful *résumé* of the observations of MM. Leuret and Mitivié, of MM. Hourmann and Dechambre, and of Dr. Pinnock of Philadelphia, on the subject of the frequency of the heart's action and pulsations in advanced life. The labours of these several observers, with whose general results those obtained by our author coincide, tend to establish the fact that, contrary to pretty general belief, the average

number of the heart's pulsations in the minute is, if anything, greater than in the young adult, or at the middle period of life. "It is in old age," say MM. Hourmann and Dechambre, "that the pulse presents extremes of slowness or of frequency; but the first case is the exception, the second is the rule; the error of past time has been to take the one for the other." Dr. Maclachlan concludes, from his own observations on aged men, coupled with those of the writers above named, that, "as a general rule, it may stated, in healthy subjects, the number of the pulsations of the heart in the minute increases with the advance of life after sixty years of age, though slowly; in the aged female, as in the adult, it is quicker than in the male of the same age, and in both it gains four or five beats or more when the person is standing. In this respect change of posture seems to have as much influence, if not more, on the heart's action in the old."

So much has been written during late years on the subject of cardiac affections that in a work like this before us we can hardly expect to meet with much that is new. We have, however, carefully examined the several chapters on the different organic and functional derangements of the viscus in question, and find that, as in the former parts of this work, the author has brought together in a most satisfactory way the facts which former labourers had collected, with a view of establishing the general principles of treatment referable to the heart itself, and to the effects of its lesions on the system; and we would observe that the chapter on angina pectoris is specially worthy of perusal.

We must pass over the next portion of the work—that which treats of diseases of the digestive organs—notwithstanding that it presents much that is interesting, especially as respects the chronic and symptomatic forms of dyspepsia.

Diseases of the urinary organs form the subject of the next part. Want of space forbids us to enter as fully into the consideration of the chapter on those affections as we would wish. We extract, however, the following important observations on chronic enlargement of the prostate gland, as we believe that many have fallen into error in estimating the frequency of this affection among the aged:—

"Forcing itself upon our attention by the sad train of symptoms accompanying it, chronic enlargement of this gland has long been recognized as a malady of great frequency and extreme importance. It is a rare occurrence, says Home, for a man to arrive at eighty years of

age without suffering more or less under it; and so common has it been supposed, that one of the greatest of British surgeons, lately passed away, seemed to regard it as an invariable accompaniment of old age. It may safely be asserted, however, that nine-tenths of those who reach the age of seventy and upwards die without ever having exhibited any symptom of prostatic disease. The accurate observations of Mr. Henry Thomson, on the 'Anatomy and Pathology of the Adult Prostate,' in which he shows by statistical research the fallacy of the usually-received opinion that enlargement of the prostate is one of the changes natural to old age, have been corroborated by the still more extended inquiries of Mr. Cockburn Messer, in his 'Report on the Condition of the Prostate in Old Age,' founded on the dissection of 100 specimens in individuals over sixty years of age, by which 'it appears that 35 per cent. of all prostates after the age of sixty are abnormally large, 20 per cent. are abnormally small, and 45 per cent. are within the limits of the normal weight.' Mr. Thomson found an appreciable enlargement at the rate of 32 per cent. in persons above fifty years old, and notable enlargement, causing symptoms during life, at that of 12 per cent. Long before these results were obtained, I had satisfied myself that enlargement of the prostate was the exception. I had commenced a series of observations among the living and deceased in-pensioners of Chelsea Hospital, which were interrupted, the rough notes of which I still possess. I can confirm Mr. Messer's statement that the proportion of men in advanced life suffering from the consequences of enlarged prostate is indeed small. In 1600 old men, with an average sick-list of 200, he found not more than 10 under treatment for this disease in Greenwich Hospital when his inquiries were instituted, and a half of these only occasionally. A similar immunity exists at Chelsea Hospital among a still older body of men than in the sister establishment."

Dr. Maclachlan expresses a most unfavourable opinion of some of the plans recommended in books as a means of retarding and removing the enlargement of the prostate; he has no faith in blood-letting either locally or in the vicinity of the part affected—sedative suppositories, setons, &c. "These and like measures," he says, "utterly fail in their intention, and some of them at least are worse than useless." He considers the most likely means of checking the progress of the enlargement to consist in "avoidance of stimulating articles of diet, moderation in the use of alcoholic beverages, or in certain cases their entire abandonment; occasional tepid baths, regular walking exercise, implicit attention to the calls of nature, and an open state of the bowels. The mildest laxatives

only are admissible." Some instructive cases are adduced, in which the officious and careless employment of instruments was followed by urgent strangury or complete retention, and in which there appeared every reason to believe these would not otherwise have appeared, or were at least far off. "It is by no means intended," he adds, "by those examples to deter the practitioner from introducing an instrument into the bladder, but only to caution him not to employ it heedlessly, and only when it is necessary to relieve complete or partial retention of urine, since, however carefully passed, the operation appears to be liable to cause mischief in certain states of the enlarged prostate, dependent on temporary attacks of congestion or inflammatory irritation."

The next part treats of affections of the skin; and the concluding portion of the book is devoted to an exposition of the constitutional or blood-diseases which are met with in the aged. We would gladly have dwelt on some of the matters of interest contained in these chapters, but we feel that our limits compel us to bring our remarks to a close, and in doing so we have to express the high sense we feel of the valuable benefit which Dr. Maclachlan has conferred upon medical literature in the work to which we have thus introduced our readers.

NEW EDITIONS.

1. *Dr. J. Moore Neligan's Practical Treatise on the Diseases of the Skin.* Second Edition, Revised and Enlarged. By T. W. Belcher, M.A., M.D., &c., &c. Dublin: Fannin & Co. 1866. Post 8vo, pp. 526.

2. *Lectures, Chiefly Clinical.* By Thomas K. Chambers, M.D., &c. London: Churchill. 1864. 8vo, pp. 599.

3. *A Dictionary of Practical Medicine, comprising Special Pathology, the Principles of Therapeutics, the Nature and Treatment of Diseases, Morbid Structures, and the Disorders Specially Incidental to Climates, to Races, to Sex, and to the Epochs of Life; and with an Appendix of Approved Formulæ. The whole forming a Digest of Pathology and Therapeutics.* By James Copland, M.D., F.R.S., &c. Abridged by the Author, assisted by James C. Copland, M.R.C.S., and M.S.A., and throughout

brought down to the Present State of Medical Science. London: Longmans. 1866. Royal 8vo, pp. 1,537.

4. *Medical Lexicon: a Dictionary of Medical Science, containing a Concise Explanation of the Various Subjects and Terms of Anatomy, Physiology, Hygiene, Therapeutics, Pharmacology, Pharmacy, Surgery, Obstetrics, Medical Jurisprudence, and Dentistry; Notices of Climate, and Mineral Waters; Formulæ for Officinal, Empirical, and Dietetic Preparations; with the Accentuation and Etymology of the Terms, and the French and other Synonyms, so as to constitute a French as well as English Medical Lexicon.* By R. DUNGLISON, M.D., &c. Thoroughly Revised and Very Greatly Augmented. Philadelphia: Blanchard & Lea; London: Trübner. 1865. Royal 8vo, pp. 1,047.

5. *A System of Surgery, Pathological, Diagnostic, Therapeutic, and Operative.* By SAMUEL D. GROSS, M.D., &c. Illustrated by over 1,300 Engravings. Third Edition, Much Enlarged and Carefully Revised. In Two Volumes. Philadelphia: Blanchard & Lea; London: Trübner. Royal 8vo, pp. 1,049–1,087.

6. *Principles of Human Physiology.* By WM. B. CARPENTER, M.D., &c. Sixth Edition. Edited by HENRY POWER, M.B., London, F.R.C.S., &c. London: Churchill. 1864. 8vo, pp. 946.

7. *A Manual of Physiology, including Physiological Anatomy.* By W. B. CARPENTER, M.D., &c. Fourth Edition, with two Plates and 250 Wood Engravings. London: Churchill. 1865. Fcap., pp. 749.

8. *The Microscope and Its Revelations.* By WM. B. CARPENTER, M.D., &c. London: Churchill. 1862. Fcap. 8vo, pp. 792.

9. *A Treatise on the Principles and Practice of Ophthalmic Medicine and Surgery.* By T. WHARTON JONES, F.R.S., &c. Third Edition. Recast, Much Enlarged, and Illustrated by Numerous Additional Engravings. London: Churchill. 1865. Fcap., pp. 806.

10. *Lectures on the German Mineral Waters, and on their Rational Employment; with an Appendix embracing a Short Account of the Principal European Spas and Climatic Health Resorts.* By

Sigismund Sutro, M.D., &c. Second Edition, Carefully Revised and Enlarged. London: Longmans. 1865. 8vo, pp. 419.

11. *Elements of Physics or Natural Philosophy, written for General Use, in Non-technical Language.* By Neil Arnott, M.D., F.R.S. Sixth and Completed Edition. London: Longmans. 1865. 8vo, pp. 726.

12. *The Philosophy of Health, or an Exposition of the Physiological and Sanitary Conditions Conducive to Human Longevity and Happiness.* By Southwood Smith, M.D. Eleventh Edition, Revised and Enlarged. London: Longmans. 1865. 8vo, pp. 395.

We have again to bring under the observation of our readers a variety of new editions of standard works, and, as on a previous occasion, we shall notice them in a single article.

Neligan on the Diseases of the Skin. Second Edition. Edited by Belcher.—This is another of the works of our predecessor in the Editorship of this Journal that has been republished since his death—a fitting monument to his industry, learning, skill, and reputation. Under the Editorship of our learned contributor, Dr. Belcher, the work has been most fully and accurately brought up to the level of the present day; and, though no opinion, statement, recommendation, or fact recorded by Dr. Neligan has been omitted, the whole has undergone careful revision, while, by the adoption of fuller pages and a slight increase in their number, the volume has been made to contain half as much more matter as the previous edition. The Editor, who, besides having been a pupil of Dr. Neligan, has, as physician to the Dublin Dispensary for Diseases of the Skin, and as the pages of this Journal testify, worked assiduously and carefully at dermatology, avoids, very wisely in our opinion, the system of brackets and foot-notes, and incorporates his new matter with the text, but in such a manner as to indicate very clearly the opinions and statements for which he is himself responsible and those of Dr. Neligan; nor has he been less careful with those of other authors. The additions embrace a very copious and carefully-compiled bibliography, references to the illustrations in Dr. Neligan's *Atlas of Cutaneous Diseases*, together with descriptions of exanthemata and various other diseases not originally

noticed by the author. We can have no hesitation in expressing our opinion that Dr. Belcher has made this one of the most complete and perfect practical treatises extant at the present day on diseases of the skin.

Lectures, Chiefly Clinical. By Thomas K. Chambers, M.D.—This is the second edition of a work, the first edition of which we reviewed in February, 1863. It was then entitled *The Renewal of Life; Clinical Lectures Illustrative of the Restorative System of Medicine, &c.;* and it will be in the recollection of our readers that we then, in common with many of our contemporaries, very freely expressed our condemnation of the title of the book and of certain other parts that we thought calculated rather to attract the non-professional than the professional reader. We have now great satisfaction in observing that the objectionable title and other matters have been removed, and that the work has assumed a strictly scientific tone. Two further editions have, we see by the advertising lists, been published since the one before us, and if where a book has reached a fourth edition the commendation of a reviewer could be of any value to it, we would very cordially endorse the verdict our profession have already pronounced, and recommend the book in its present improved condition to all our readers. Dr. Chambers carries his readers to the bedside, and there illustrates and tests his theories. He is evidently a deep thinker and a scientific physician, who seeks to treat disease on sound principles and not by routine or dogma.

Copland's Dictionary of Practical Medicine.—We have here Copland's *Dictionary*, originally published in four volumes, condensed into one, certainly not a small one, but still one volume. The title-page, which we have copied above, is so full that even if the work were an unknown one, it would leave little for a reviewer to say as to its contents. The abridgment has been executed by the author, with the assistance of his son, which is a sufficient guarantee that it has been carefully done. In order that all really practical subjects should be retained, and not so abridged as to impair their value, several articles appertaining rather to the subordinate sciences and to general pathology, the bibliography and references have been excluded; and part of the space thus gained has been occupied with notices of the more important contributions to medical science since the publication of the original edition.

Dunglison's Medical Dictionary.—This work, unlike that of Dr. Copland, which we have just noticed, is more of a lexicon than an encyclopedia of medical science; and yet not a mere lexicon, for, under all the principal terms, a well condensed summary is given of the subject to which the term refers. We have long been in the habit of using an earlier edition of this lexicon, and have found it most useful and correct. The present edition has been enlarged and revised.

Gross' Surgery.—In November, 1859, and in February, 1863, we commended very highly the first and second editions of this work, and we have now only to renew our former praises.

Carpenter's Human Physiology; Manual of Physiology; Microscope, and its Revelations.—Dr. Carpenter announces in the preface that, finding his time much occupied with his official engagements, and wishing to devote what leisure he had to original investigations, he resigned the preparation of the sixth edition of his *Human Physiology* to the care of Dr. Power, "a gentleman in whose ability and conscientious zeal he felt great confidence;" and that with the exception of the first and second chapters, which were prepared before he decided on taking this step, he holds himself exempt from responsibility in regard to either the scientific character or the literary execution of the present issue, in which, moreover, he has no pecuniary interest whatever.

We have examined this volume with considerable care, and have no hesitation in saying Dr. Power has admirably succeeded in accommodating it to the present state of physiological science. In every chapter we see the latest results of original observations carefully analyzed and clearly stated; and by omitting the sections on the functions of the cerebrum, which belong rather to psychology than to physiology, and which Dr. Carpenter holds out a hope that he will elaborate into a manual of psychology, space has been gained, which has been devoted to subjects more truly physiological, consequently, though much new matter has been added to the volume, its bulk has not been increased. We have no doubt *Carpenter's Human Physiology*, edited by Power, will maintain the position so long and so worthily held by the successive editions published under the author's own supervision. With regard to the other volumes bearing Dr. Carpenter's name, it is only necessary to say that these editions have come out under his own superintendence.

Wharton Jones on Ophthalmic Medicine and Surgery.—In no department has the science of medicine made more progress recently than in that of which this volume treats; but we have, during the last year, devoted so much space to optics and ophthalmic surgery that we can only announce the appearance of the present edition of Wharton Jones' well-known treatise, and acknowledge the general accuracy of his assertion that he has "endeavoured to make it as complete an exposition as possible of the subject in its present advanced state."

Sutro on German Mineral Waters.—This work has grown to its present dimensions from a series of lectures delivered at the Hunterian School of Medicine, and published in the pages of one of our contemporaries, where they met with such a reception as to induce the author to collect them into a volume and publish them separately. A new issue has now been again called for, and Dr. Sutro has added, in an Appendix, a short but comprehensive account of all the important health resorts not treated of in the former edition. We suppose it is impossible for any one, especially a German, to write a book about mineral waters without attributing to them mysterious properties, not to be explained by the ordinary laws of physics ; and we are not, therefore, surprised at Dr. Sutro "assuming that the caloric produced by volcanic processes exerts a a different influence on the human system than that which has been artificially produced." However, notwithstanding these heresies about "the peculiarity of the *inherent* heat of the springs," and such like, we believe this to be a very excellent manual on the subject of which it treats, and one the physician will find most convenient for reference, and useful in his every day practice.

Arnott's Physics and *Southwood Smith's Philosophy of Health.*—These works are intended for the use of the non-medical world, and we believe no greater service could be done, both to the profession and to society at large, than the cultivation of a taste for information such as these admirable volumes are well fitted to afford.

1. *Lectures on the Pathology and Treatment of Lateral and other forms of Curvature of the Spine.* By William Adams, F.R.C.S. London: Churchill & Sons. 1865. 8vo, pp. 334.
2. *Curvatures of the Spine, their Causes, Symptoms, Pathology, and Treatment.* By Bernard E. Brodhurst, F.R.C.S. London: Churchill & Sons. 1864. Royal 8vo, p.p. 93.

Treatises on spinal curvatures and general deformities have in so many instances been but the advertising media of charlatans and empirics that we have long had an almost instinctive dislike to the very names of them. The treatises by Messrs. Adams and Brodhurst, which we have now to introduce to our readers, are, however, of a very different class. They are the productions of men who have carefully worked out their subject, and honestly laid the results before their brethren, and we propose to analyze them somewhat fully, so as to show the present state of our knowledge on the subjects of which they treat.

The opportunities presented to students for studying these affections are very few, so that most of us have been in the same position as Sir Benjamin Brodie, who stated in one of his lectures delivered in 1846, that when he first became engaged in considerable private practice, and cases of curvature of the spine were presented to his observation, he was in doubt as to their nature and treatment. "I knew nothing of them," he says, "from my own experience, and I had learned nothing of them from my teaching. I felt that in this respect my education had been imperfect, and it took me no small trouble to supply the deficiency." It must be placed to the credit of special hospitals, against which so much has been said and written, that they have sent forth works so well fitted as those before us to supply this deficiency in medical education.

Spinal curvatures to a slight extent are very common, and when they do not exceed certain limits are of very trivial importance; but extreme uncertainty must always exist as to their progress; for though some may undergo spontaneous arrest at an early period, in other cases the curvature increases so as not only to produce deformity, but to seriously injure the general health by producing local pain, or by interfering with the action of the heart and lungs, or digestive organs.

Some controversy has taken place as to whether there is any normal lateral curve in the spine. As is well known, the majority

of our anatomical writers describe a normal lateral curve in the dorsal region, convex towards the right side; and some believe there is another curve in the opposite direction, in the lumbar region, which Bühring names the *hepatic curve*, to distinguish it from the other, which he calls the *cardiac*. Mr. Adams "entirely concurs with Dr. Little in doubting the existence of lateral curves as a normal condition of the spine," and states that during the twelve years from 1842 to 1854, that he acted as Demonstrator of Morbid Anatomy at St. Thomas's Hospital, he habitually examined the spine after eviscerating the bodies, and remarked the great rarity, rather than the frequency of any lateral curve. Mr. Brodhurst says he has himself seen the measurements made by Bühring, and can bear testimony to their accuracy; and we must confess that strong as Mr. Adams' statement is, we are not prepared to give up our belief in the existence of a normal lateral curve in the dorsal region; but the fact that the existence of such a curve is doubted ought always to be sufficient to put us on our guard, when consulted about a slight curve in young subjects, even in this region, and to teach us to watch carefully lest it may increase and become a serious deformity. The antero-posterior curve, arising from caries of the vertebræ, is not taken into consideration by either of our authors, but only those forms of curvature to which the terms *lordosis* for the anterior curvature, *cyphosis* for the posterior, and *scoliosis* for the lateral, have been applied since the days of Hippocrates.

Lordosis, or anterior curvature, chiefly affects the lumbar region, being an exaggeration of the normal curve found there, but it may also occur in the cervical, and even in the dorsal regions; and Mr. Adams devotes separate sections to the consideration of it in these situations. The appearances produced by it in the lumbar region are well displayed in the illustrations given by both authors. The nates are raised, the lumbar region is rendered remarkably hollow, the dorsal is rounded, and the head is thrown back, the abdomen is unusually prominent, and the stature stunted. This deformity is often hereditary, affecting several members of the same family. It occurs in rickets, of which it may be the only sign, or it may be only one of the signs of a severe and general form of this affection. The softened pelvis becomes distorted from the superincumbent weight, the sacrum becomes horizontal, and the lumbar curve is increased to maintain the equilibrium. In some cases in which the projection anteriorly has been very great, it has been attributed to a dislocation of the lumbar vertebræ. Such a dislocation is,

however, impossible. The deformity may be so great as to prevent natural parturition, and even render the Cesarean section necessary. Whatever tends to cause obliquity of the pelvis may produce lordosis. Both Mr. Adams and Mr. Brodhurst refer to cases of congenital dislocation of the hip as causing it; and Mr. Adams remarks that where both hips are dislocated, the true nature of the case is generally overlooked. Unreduced non-congenital dislocation will also produce it, as well as anchylosis of the hip joint, with the thigh flexed, or indeed anything causing one leg to be shorter than the other. It may also coexist with caries of the lumbar vertebræ in an early stage, or be consecutive to arrest of destructive disease, and the occurrence of angular curvature in the lower dorsal region. Mr. Brodhurst describes a case in which a very different cause produced the curve—the muscles of the abdomen had undergone fatty degeneration, and the whole viscera hung suspended in a huge tumid paunch, the weight of which had in part caused the distortion which was one of the most remarkable he had ever witnessed. The fatty degeneration had affected many of the muscles of the back and of other regions, adding to the effect. The gravid uterus sometimes produces lordosis by its weight, and the carrying of heavy weights round the neck and shoulders may have a similar effect.

A consideration of the causes of this form of curvature shows that the treatment resolves itself chiefly into that of the condition tending to produce the curve; if there be constitutional debility or rickets, treatment must be directed to the removal of these conditions Both authors urge that in the case of rickets the horizontal position, prone or supine, should be maintained, the children being induced to exercise themselves with weights, pulleys, and ropes, or elastic bands properly arranged, as suggested by Mr. Brodhurst, who, however, permits any exercises when the distortion is very slight only; when it is severe he says it should be entirely prohibited. The recumbent position is the most powerful means we possess for removing lordosis; but in some cases it may not be practicable to maintain it constantly, and then Mr. Brodhurst applies a light portable instrument, which receives the weight of the body and transmits it to the pelvis, relieving the spinal column; but he finds this a very imperfect substitute for the recumbent position. In speaking of lordosis in connexion with caries, Mr. Adams takes occasion to say that, contrary to the directions given in all surgical works, that the patient should be kept lying during the progress of the caries, he has for more than twelve years adopted

the practice of applying mechanical support to the spine in these cases, by means of either a leather or steel apparatus, according to age, and allowing the patient to walk about when so inclined, which he finds to promote the proper constitutional treatment, and to be applicable in all stages of the caries.

Cyphosis, or posterior curvature, is one of the most common forms of spinal distortion, and may occur in infancy, youth, or old age. The term has been applied to the angular curvature arising from caries; but our authors, as has already been stated, do not include this in their description. The disease is one essentially of debility, whether in infancy, youth, or old age; it may arise from rachitis, muscular rheumatism, or partial paralysis, as well as from the habitual use of a stooped attitude, as in certain occupations. Such cases are best treated by a combination of local support to the spine and constitutional treatment. Where the debility is great in children, the horizontal position must be maintained till they have the power to sit or stand erect. In slighter cases a splint of leather or gutta-percha may be applied to the back. A weighty apparatus is liable to do more harm than good. After childhood a portable apparatus may be used with advantage, and much benefit may be derived from the judicious use of gymnastic exercises.

We now enter on the consideration of scoliosis or lateral curvature, and the great importance of this form may be estimated from the fact that both Mr. Adams and Mr. Brodhurst devote more than two-thirds of their volumes to its description. Mr. Brodhurst divides cases of this kind into two classes, *incipient curvature*, or that condition which is removable in the horizontal posture by slight lateral pressure, and *confirmed lateral curvature*, which requires long-continued mechanical means to effect the same object. Mr. Adams makes but one class; he defines lateral curvature as a deformity or distortion of the spine in which the bodies of the vertebræ deviate laterally in a horizontal direction, with or without a corresponding deviation of the apices of the spinous processes. He undertakes to demonstrate that in many severe cases of scoliosis the spinal column presents on its anterior aspect a large sigmoid curve, whilst posteriorly very little deviation exists in the perpendicular line of the apices of the spinous processes; and that in slight cases, in which an internal curvature affecting the bodies of the vertebræ essentially exists, there may be no external curvature or lateral deviation of the apices of the spinous processes. Mr. Adams asserts that it is anatomically impossible for any distortion of the spine,

such as lateral curvature, however slight, to exist without being accompanied with structural alterations proportionate to the extent and duration of the curvature; but he admits the existence of a large class of cases simulating lateral curvature, and which he calls *weak spines*, or *cases of threatened lateral curvature*, which may terminate in confirmed lateral curvature if not prevented by proper treatment. These cases are, he says, described by many authors as the first stage, and not only magnified into undue importance but treated by spinal instruments, when really they only require gymnastic and constitutional treatment. We apprehend most of our readers, however they may agree with Mr. Adams as to the mode of treatment of these cases, will concur with those authors who regard these *weak spines* as really cases of lateral curvature in the first or incipient stage.

The symptoms of lateral curvature are very fully described by Mr. Adams, and more summarily by Mr. Brodhurst; both authors give illustrations showing the peculiarities of the curve as presented in different patients; but it is unnecessary to dwell on these here, and we pass to the consideration of the morbid anatomy of this form of curve; and here we will allow Mr. Adams to speak:—

"In the description just given of the *external characters* of lateral curvature in its different forms, I have already indicated the fact to which I would now more especially direct your attention—viz., that in lateral curvature the spinal column does not yield in a purely lateral direction, as a flexible column would bend, but presents the appearance of a spiral twist, owing to the bodies of the vertebræ turning round in a direction of *horizontal rotation*, so that their anterior surfaces are directed laterally along the convexity of the curvature. In a severe case this rotation commonly extends to a quarter of a circle in the centre of the curve, and diminishes from this point to the two extremities, so that the vertebræ unequally turned upon themselves, cease to correspond in their natural relations to each other, as well described by Bouvier. In a case of extreme severity, this rotation will sometimes extend even to half a circle, so that in the centre of the curve the anterior surfaces of the bodies of the vertebræ have a directly lateral aspect; in such cases the angles of the ribs project posteriorly, and are bent sharply upon themselves, extreme deformity of the chest of course resulting.

"This deviation of the bodies of the vertebræ does not necessarily correspond to, nor is it indicated by, any lateral deviation of the apices of the spinous processes. It may exist to a considerable extent—the rotation extending to a quarter of a circle in the centre of the curve—without any, or at least with very slight, lateral deviation of the apices

of the spinous processes, as shown by the preparation from which the drawings in Plates III., IV., and V. were taken."

Mr. Adams gives a diagram illustrating the manner in which the vertebræ rotate on one another, a morbid change first observed by Dr. Dod, in 1824, but not fully understood; and Mr. Adams claims to have shown, for the first time, the existence of internal without any external curvature or lateral deviation of the apices of the spinous processes, either in severe or slight cases, and the means of detecting this deviation, and gives the following description of the effects on the figure:—

"If it be rare to find the extreme degree of internal, coexisting with an absence of external curvature, as in the case above described, it is undoubtedly true that internal curvature frequently exists to a slight extent without any external lateral deviation of the apices of the spinous processes, as well exhibited in Plate II., and the class of cases in which this condition will be found is where a prominence, or a *growing out*, as it is called, of one shoulder is said to exist without any spinal curvature. Such cases are frequently the cause of great anxiety to parents, but are dismissed by surgeons with the comforting assurance *that there is no curvature of the spine*, whereas the prominence of the shoulder, *i.e.*, the posterior projection of the scapula and the angles of the ribs, might most certainly be relied upon as indicating the existence of internal curvature, or lateral deviation of the bodies of the vertebræ. The prominence, or *growing out*, of the shoulder ought therefore to be regarded as indicating the existence of internal curvature of the spine, rather than an unimportant external appearance depending, as it is generally said, upon enlargement of the muscles caused by excessive use of the right arm.

"A little consideration, and the examination of specimens preserved in museums, will convince you that the spiral twist which the spine undergoes in lateral curvature, and which is due essentially to a *horizontal rotation* movement of the bodies of the vertebræ, must necessarily produce a *posterior projection of the angles of the ribs*, on the side of the convexity of the curve, in the dorsal region; and a *posterior projection of the transverse processes* on the side of the convexity of the curve, in the lumbar region, in a degree more proportionate to the extent of deviation of the bodies of the vertebræ; whilst in the concavity of the curve, the angles of the ribs in the dorsal, and the transverse processes in the lumbar region are depressed or sunk inwards to a corresponding extent, and these conditions may be more certainly relied upon than the spinous processes, as indicating the existence of internal curvature or lateral deviation of the bodies of the vertebræ."

The structural changes in these cases affect the inter-vertebral substance and the bodies of the vertebræ themselves, which become thin and wedge-shaped in the concavity of the curves, but the articulating processes are still more remarkably altered. Even at the commencement of the disease they become altered in direction and aspect, and in severe cases, of long standing, they may present an irregular enlargement and nodulated appearance round the margins of the articular facets, resembling the condition found in chronic rheumatic arthritis. The transverse processes, also, not only have their direction altered, but may have their figure changed, probably from the effect of altered muscular action, becoming attenuated and projecting backwards in a curved or horn-like form. Mr. Adams believes that these changes occur in all classes of cases; and, contrary to the opinion of some writers, that there is no special connexion with rickets, or special liability to lateral curvature in consequence of the abnormal condition of the bones in cases of rickets; but that when curvature occurs in rickets it is at a late period, and in consequence of a difference in the length of the legs from rachitic deformity. On this point Mr. Brodhurst differs in opinion, and describes a special rachitic scoliosis in which the bodies of the vertebræ become softened, and yield, consequently, to pressure.

In the following passage we have the key to Mr. Adams' views as to the etiology, and mode of production, of lateral curvature; it is taken from the beginning of the sixth lecture, which, with the two following lectures, is devoted to an elaborate exposition of his views, and discussion of those of other writers:—

"I know of no affection, the treatment of which should be more directly influenced by a consideration of the causes which produce it, than lateral curvature of the spine, and therefore we cannot too closely analyse the precise nature, and *modus operandi* of the various causes which are said to produce this form of spinal curvature. Generally in books on lateral curvature, we find the causes traced either to certain conditions of the muscular system, or to certain occupations associated with these conditions; thus in the most recent of these books, we find the causes arranged under the several heads of: 1st. muscular and ligamentous debility; 2nd. muscular hypertrophy; 3rd. muscular atrophy; and 4th. spasm of the muscles, and though other causes, such as obliquity of the pelvis, rickets, and some organic affections are admitted as causes, the cases are generally assigned to the muscular conditions above adverted to. In another book, we find only one class of cases described, viz.: those depending upon muscular debility, the other forms of this affection being

merely enumerated. We cannot, therefore, be surprised to find only one method of treatment, such as a spinal instrument of the author's invention, recommended for all cases. Now, it appears to me, that a careful study of this affection must necessarily lead to the conviction that lateral curvature of the spine depends very largely upon certain *constitutional conditions*, such as an *hereditary tendency* to this affection, which may be traced probably in half the cases which come under our notice; a *strumous diathesis* associated with which the worst forms of curvature, often erroneously classed as cases of rickets, are frequently seen; and *constitutional debility* either existing from infancy or induced by febrile affections, &c.

"Co-existing with these constitutional conditions we can also in most instances, in which the spinal curvature is produced after 10 or 12 years of age, but not in those of an earlier date, trace certain *local causes* acting mechanically so as to disturb the equilibrium of the spinal column; and upon a careful consideration of the relative causative influence of these constitutional and local causes, in any given case, I believe it is alone possible to determine the principles of treatment applicable to such a case.

"It appears to me, therefore, that the causes of lateral curvature may very properly be arranged in two classes—viz., the predisposing, and the proximate causes.

"1st. *Predisposing causes.* These are essentially constitutional, either hereditary or acquired, such as hereditary predisposition; strumous diathesis; constitutional debility; rickets; induced or temporary muscular debility.

"2nd. *Proximate causes.* These are essentially local or such as act mechanically upon the spinal column to disturb its equilibrium, such as: *a.* The long continuance of certain bad positions, such as the habit of standing on one leg; the sitting position during education, especially for writing and drawing purposes; sitting cross-legged and in a stooping position, as some young ladies do for several hours a day, when fond of reading; excessive horse exercise, to which delicate girls are frequently subjected with the object of improving the general health, but often with the result of producing a curvature of the spine with rotation in the lumbar region. *b.* certain occupations, such as needlework, envelope and book folding, flower making, &c.; also nursing children, or carrying weights; ironing, and any other occupation which may render necessary the long continuance of any position which would disturb the equilibrium of the spinal column. *c.* inequality in the length of the legs from any cause; the use of a wooden leg, &c.; and *d.* certain diseases of the chest, such as empyema, and some other affections of the thoracic and abdominal organs.

"The *modus operandi* of all these proximate causes is essentially similar,

the resulting curvature of the spine being produced by the *long continued irregular distribution of weight*, resulting from any position which, for a sufficient length of time, disturbs the equilibrium of the spinal column, and throws the weight continuously in the same direction.

"The immediate cause, therefore, in all cases is essentially mechanical, and I have already demonstrated in the preceding lectures that the structural changes produced are merely the effects of mechanical pressure.

"In explaining the origin and mode of production of any case of lateral curvature, we must first endeavour to ascertain the existence of any of the predisposing causes, and then recognise the purely mechanical cause, *i.e.*, the irregular distribution of weight, as immediately and directly producing the structural changes which render the curvature fixed, persistent, or confirmed as it is frequently called; it being considered as proved that no persistent curvature, however slight, can exist unaccompanied by such structural changes."

In discussing the various theories that have been proposed as to the cause of lateral curvature, Mr. Adams devotes special attention to the *muscular theory*, as he calls it. M. Guerin is the great advocate of this theory, maintaining that the lateral curvature depends primarily and essentially upon muscular retraction of an active character, caused by some abnormal condition of the nervous centres. On this theory the proposal to treat these cases by subcutaneous section of the muscles is founded; a method so ably and forcibly advocated by M. Guerin, as to have very favourably impressed both the profession and the public in its favour. In one case Mr. Adams was induced to adopt the practice, but subsequent experience convinced him of its impropriety; and he now shows, both by *post mortem* examinations, and a critical examination of the theory, that it is altogether fallacious. It appears to us that in controverting the muscular and other theories Mr. Adams has expressed himself so that his readers may overlook what he says on the constitutional causes, and regard the mechanical causes as the sole agencies in the production of the curvature. On this point, though equally regarding the mechanical as the exciting causes, Mr. Brodhurst expresses himself more in accordance with what we consider the relative importance of the two sets of causes:—

"The causes of scoliosis are various. They are general and local debility, rickets, thoracic disease, obliquity of the pelvis, &c.

"*Debility* is, without doubt, the most common cause of scoliosis. It shows itself in various ways. Thus, muscular debility during convalescence,

and weakness of the ligaments during too rapid growth, give rise very frequently to this common affection.

"Let us take, for instance, the case of a child whose health has been rendered delicate from whatever cause. If it be treated in the same manner as a stronger companion, some irregularity of form will probably develope itself; but the particular form of distortion will depend mainly on the habits of the child. For instance, if the child stand or walk much, it is probable that the internal lateral ligament of the knee-joint will yield, and give rise to genu valgum; and this distortion will probably be followed by yielding of the ligaments of the ankle-joint, and of those in the sole of the foot—valgus. Let us, suppose, moreover, that in consequence of resting too much on one leg, as is very common with such children, the ligaments of that extremity have yielded more than those of the other. Virtually, that leg is shorter than the other; and, consequently, both feet resting on the ground, the pelvis necessarily becomes oblique to accommodate itself to the difference in length of the extremities. But an oblique pelvis must give rise to spinal curvature, as will be explained farther on.

"Those who are feeble, whether from overgrowth or during convalescence, constantly change their position while standing; so that they rest for a short time only in one position and then change it for another—from both feet to one foot, for instance, and back again. And it is found that it is habitually the right foot in some cases, and in others the left foot, which has, in this way, to bear very frequently almost the entire weight of the body, until, at length, it becomes more natural to stand on one leg only than fairly on both. It becomes so natural to do this, that it is done unconsciously; and until it is pointed out, the patient is frequently not aware of the habit. This occurred, and it was frequently pointed out, in the case from which Figure 9 was taken.

"Debility alone does not usually give rise to lateral curvature of the spine; but there must be superadded bad habits of standing or sitting which shall occasion obliquity of the pelvis and a primary lumbar curve. These habits to which I have alluded depend on debility, however; and therefore it is right to speak of debility as the cause of these distortions, But without obliquity of the pelvis, and therefore without bad habits of sitting or standing having been formed, lateral curvature of the spine may be occasioned by general debility. It may commence as a dorsal curve, as was the case with the patient from whom the following figure (Figure 10) was taken. This is a form of curvature which commonly begins during convalescence; and commencing as a dorsal curve, it shows that it does not depend primarily on obliquity of the pelvis, nor on any affection of the lower extremities.

"Every distortion is produced by a special cause. It need scarcely be said that while the cause of curvature remains, the curve itself cannot be

removed; or if it should be temporarily removed, it will certainly recur, inasmuch as the cause which first occasioned it still exists. This question of cause is one of the utmost importance, therefore, in the treatment of spinal curvature. It is greatly neglected, however, and misunderstood, so that with many the treatment of spinal curvature is simply to apply a spinal instrument, without reference to the cause of curvature."

Mr. Brodhurst further speaks of scoliosis as hereditary in some cases, where he attributes it to rachitis, or malformation, or nervous irritation. Paralysis of one side of the trunk will, he shows, allow the healthy muscles to draw the spine away from the mesial line, and so cause a curvature, and also the habitual carrying of weights on one arm. The wearing of stays Mr. Brodhurst looks on as a predisposing cause of considerable importance; the muscles of the back, he says, become atrophied, allowing the causes which tend to produce curvature to act with increased force. Mr. Adams, however, argues, that in the great majority of cases the curvature forms at an early age, and before the practice of tight lacing is adopted, and he altogether rejects this as one of the causes of curvature.

The treatment of lateral curvature must be both constitutional and local, and directed with a view to the removal of the causes of the affection. Debility must be corrected by the adoption of proper constitutional and hygienic treatment, and local causes must be removed. If the curvature be caused by obliquity of the pelvis, from one of the legs being either actually shorter, as from atrophy, or relatively shorter, as from inflection of the knee, it will be useless to attempt to remove the curvature without first correcting the disproportion of the legs; and when this is duly done, the curvature will in a great measure disappear, without any treatment specially directed to it. Mr. Adams enumerates five systems of local treatment as having been advocated, and reported at times as in every way successful, and enters into an examination of their merits:—

"1st. The system of *complete recumbency.*

"2nd. The system of *muscular exercise, or gymnastics.*

"3rd. The system of *cutting the spinal muscles.*

"4th. The system of *mechanical extension.*

"5th. The system of *mechanical treatment by support and pressure*, applied by means of spinal instruments."

Of these, Mr. Adams regards recumbency as a curative means, but he rejects it as a system to be relied upon exclusively. He

recommends it in every case during the period of growth in conjunction with such other means as may be thought advisable; in some instances with gymnastic exercises, in others with mechanical support, and occasionally, also, in conjunction with both these methods of treatment. In ordinary cases he recommends recumbency during four or six hours a day, which can be borne with comfort, and without disadvantage to the general health, he says, by using a reclining chair that he gives a figure of. Gymnastics and muscular exercise he also thinks capable of being made useful, but he does not at all admit that they can cure a curvature, though in threatened cases they form the best means of prevention.

Cutting the muscles he entirely disapproves of, as well as of the system of extension in either the horizontal or erect posture. The system of mechanical treatment by means of spinal instruments may, he says, be described as the English orthopedic treatment of the present day. It has been adopted and advocated, he says, by the majority of English authorities of late years, to the exclusion, it may be feared injuriously, of all other methods of treatment:—

"The instruments now in use vary considerably in their principles of construction, as well as in the mechanical details; and the kind of apparatus to be applied in any particular case must depend upon the form and situation of the curve, and also upon the age of the patent.

"There can be no doubt that the greatest advance which has taken place in modern times in the treatment of lateral curvature of the spine. has been made through the *system of mechanical treatment*, by means of spinal instruments; but as might have been anticipated from the novelty and importance of the system, too much has been expected from it, and also too much claimed for it by its principal advocates.

"Compared with other systems, there can be no question as to the superiority of the mechanical treatment, and if one plan alone were to be adopted, this would be most entitled to our confidence; but the evidence which I have laid before you of the constitutional, as well as the local causes which contribute to the production of spinal curvature; and the nature of the structural changes which occur even in slight cases of lateral curvature, must prevent our placing sole and implicit confidence in the power of any spinal instrument to cure the curvature.

"I have no hesitation in stating, that it is impossible to straighten a curved spine by any mechanical means, in the same manner and upon the same principle as we can straighten a bent knee, ankle, or any other movable articulation; but in combination with other means, such as partial recumbency, and in some slight cases with muscular exercises, it is quite possible to cure a curvature of the spine when slight and of recent

formation in young persons; and it is certainly within our power most effectually to arrest the progress of curvature when more severe."

The remaining chapters in Mr. Adams' book are devoted to the description in detail of the treatment of lateral curvature. The cases are divided into classes according as constitutional or local causes predominate in their production, and while the constitutional treatment is placed in the first rank of importance, the construction and mode of application of the instruments that may be used as accessories to it are clearly explained and illustrated by diagrams.

In conclusion, we would reiterate our opinion that both of these works are of very great value. Mr. Adams gives all the details of the anatomy, pathology, and treatment, Mr. Brodhurst, without entering into these so fully, enunciates his principles clearly. We believe the reader cannot fail to derive from the study of either one or other of the works enlarged and correct views as to the nature and treatment of spinal curvatures.

An Essay, Historical and Critical, on the Mechanism of Parturition. By William Leishman, M.D., &c., &c. London: Churchill. 1864. 8vo., pp. 129.

A correct knowledge of the mechanism whereby the human fetus is transmitted through the pelvic canal, during labour at full term, was, doubtless, essential towards the perfection of the practice of obstetrics.

It is generally considered at the present day that our information regarding this process is pretty accurate. The first step towards its elucidation proceeded from Ould, of Dublin; and the theory was gradually more fully developed by various writers, till at length the great publication of Nægèlé, of Heidelberg, appeared, which seemed to have thrown on the subject all the light that was necessary.

The results of Nægèlé's publication were wonderful, his doctrines having been the means of preventing much suffering, and decreasing to a considerable extent fetal mortality—results especially appreciable, when the issues of former practice are compared with those of one based upon his views.

To assert, however, that in the most minute particulars of this process our views, even now, are perfectly correct, from whatever

source derived, theoretical or practical, would be stating too much. But we do not consider that the knowledge of such extreme minutiæ is practically essential. We feel convinced, moreover, that in no single instance can it be satisfactorily demonstrated, that a fetal head, say in the first position, follows, in the most minute particulars, the directions, &c., taken by any previous similar presentation and position.

The broad principles of the mode of the head's progress in all first positions are decidedly identical, and that answers all practical purposes. The same may be said concerning all other positions and presentations. The extreme niceties of the mechanism of parturition are, we fear, impossible of appreciation with sufficient accuracy to enable us to arrive at *absolute* correctness, and fortunately for practice such perfection is unnecessary, however interesting and curious it may be to attempt to study the subject thus exactly.

Dr. Leishman has devoted himself to the consideration of this subject with extreme assiduity, and the present volume is the result of his labours.

In the Preface he informs us that "too much has been taken for granted" concerning "the mechanism of labour," and that "there is yet much more to learn." Most true; and we do not know to what branch of medical science these assertions are not equally applicable. Taking "too much for granted" was one occasion of the tardy progress of the Irish school of midwifery. It is but of comparatively recent date, when the dogmatic assertions of the leaders in this branch of medicine were invariably "taken for granted;" so that few attempted to turn from the beaten track because of this blind belief; while those few who had the will to deviate from settled routine were restrained by another element against progress—fear. To have even *attempted* to *examine* into the truth of certain dogmas would have given offence; but to have *ignored* those dogmas, and to have set up a new theory, would, possibly, have caused the ruin of the rash offender. Thus, in one word, enquiry was "burked." These trammels have latterly been broken. The *literæ prescriptæ* of the old obstetric legislators of the Dublin school have been examined and discussed upon with a freedom and boldness that would formerly have created amazement. And what has been the result? Why, many of their most cherished aphorisms, formerly "taken for granted" as correct, have been found quite the contrary. Not so very long since, the Dublin

school of midwifery was decidedly behind that of Edinburgh; and it is really of comparatively recent date that she has arrived at her present eminent position, so suitable to her facilities and resources—one by no means inferior to that of any other school in the world. The alumni of the Dublin school no longer take things "for granted." They have by degrees gathered pluck enough to discuss theories, and overturn them if necessary, no matter by whom propounded. A spirit of free inquiry has now usurped the place of servile obsequiousness. "The good old days" (?) are gone.

The position of senior and junior obstetricians in their relations the one towards the other, some years ago, in this city, reminds us forcibly of a scene narrated by Dickens in one of his stories. It is certainly familiar to all our readers, but its appositeness must be our excuse for inserting it:—"Mr. Willet, after having flattened his fat nose against the cold glass (window), and shading his eyes that his sight might not be affected by the ruddy glow of the fire, looked around. Then he walked slowly back to his old seat in the chimney corner, &c., &c., said, looking round on his guests, 'It'll *clear at eleven o'clock. No sooner and no later. Not before and not arterwords.*' 'How do you make that out,' said a little man in the opposite corner; 'the moon is past the full, and she rises at nine?' John looked sedately and solemnly at his questioner, until he had brought his mind to bear upon the whole of his observation, and then made answer, *in a tone which seemed to imply that the moon was peculiarly his business, and nobody else's*—'Never you mind about the moon Don't you trouble yourself about her. You let the moon alone, and *I'll let you alone.*' 'No offence, I hope,' said the little man. Again John waited leisurely until the observation had thoroughly penetrated his brain, and then replying, 'No offence *as yet*,' &c., &c." John Willet is a fair representative of the old obstetric ruler of that day, and the little man his junior.

We admire free inquiry and independent opinion. No matter how much we may respect the conceptions of a practitioner or the doctrines of a teacher, it is our duty, so far as we are capable, to examine for ourselves whether the practice of the one or the teachings of the other be correct. Therefore, although we may have been prepossessed in favour of doctrines, coming from so high a source as the elder Nægèlé, concerning the mechanism of parturition, yet we have always considered it our duty, to endeavour in our practice, whenever an opportunity offered, to discover if his doctrines were correct. We have put him to the test in every case favourable

for that purpose, and the conclusion always arrived at was, that his teachings bore the stamp of truth.

We think it praiseworthy for every one to put Nægèlé's doctrines to the test of practical experience, and endeavour to find out if there may not yet be some weak points and inaccuracies amongst them. This is what Dr. Leishman aims at, while he "endeavours, as far as he can, to throw such light on his (Nægèlé's) doctrines as have been misunderstood or controverted by late writers."

The volume contains five most interesting chapters, and may be said to consist of two parts—one historical, the other practical. The first two chapters include the history of obstetric medicine, more especially as relates to the mechanism of labour; and we are brought down from the opinions of Hippocrates to those of Halahan! These chapters are replete with information, agreeably put together, very concise, and most worthy of the student's perusal.

With respect to the mechanism of labour, our author takes as his theme the three great points mentioned by Nægèlé, in his doctrine concerning the manner in which the fetal head passes through the pelvic canal; and to the consideration of these he chiefly confines himself.

We shall briefly state what they are.

According to Nægèlé, the third position, *i.e.*, the left bregmato-cotyloid, is next in frequency to the first position, *i.e.*, the left occipito-cotyloid. To make the matter plainer, that position in which the anterior fontanelle occupies a place behind the left cotyloid cavity, and the posterior fontanelle corresponds to the right sacro-iliac synchondrosis (the third), is next in frequency to that position in which the posterior fontanelle is just behind the left cotyloid cavity, and the anterior fontanelle corresponds to the right iliac synchondrosis (the first). That the ratio of the former is to that of the latter as two to five; and that the third position (*i.e.*, where the anterior fontanelle is opposite to the left cotyloid cavity, and the posterior opposite the right sacro-iliac synchondrosis) is almost invariably changed into the second. So that the second position (*i.e*, where the posterior fontanelle corresponds to the back of right acetabulum or cotyloid cavity, and the anterior fontanelle occupies a position opposite the left sacro-iliac synchondrosis, or right occipito cotyloid) is changed into a very subordinate position as regards its importance—being the least frequent of the four vertex positions, and met with more rarely than face cases. Thus,

according to Nægèlé, the first and third positions are virtually the ordinary forms of vertex presentation; the second (right occipito-cotyloid) being merely a phase of the third (left bregmato-cotyloid) in its progress; and similarly, the fourth (*i.e.*, where the anterior fontanelle is opposite the back of the right acetabulum, and the posterior frontanelle opposite the left sacro-iliac synchondrosis, or right bregmato-cotyloid) is an early stage of the first position. In short, that virtually there are only two positions. The next point is, that from Nægèlé's descriptions no room for doubt was left as to his meaning, that there existed a lateral flexion of the fetal head; in other words, an approximation of the ear to the corresponding shoulder. That in the first position there exists an approximation of the left ear to the shoulder of the same side, is "a point," says our author, "though denied by some eminent obstetricians, almost universally taught in the British schools."

The third great point taught by Nægèlé is, that not only does the obliquity of Saxthorpe and Solayres, viz., that by which the opposing diameter of the fetal head is directed from one sacro-iliac synchondrosis to the opposite foramen ovale (or back of the acetabulum), obtain at the brim, but also at the outlet, "a fact which has been denied by more than one more modern writer than Nægèlé; so that the head does not pass with the long diameter in the antero-posterior direction, but with the sagittal suture directed obliquely across the long diameter of the external opening of the vulva." "I need not add," proceeds the author, "that although there is not one of the doctrines of Nægèlé that has not been questioned by some one or other, his views, as stated above, were almost universally adopted, and may with perfect propriety be stated to be essentially the modern theory of the mechanism of parturition."

Leaving, then, for the present, our author's views regarding the frequency of the various positions of the head at the brim, let us see what he has to say concerning the mechanism of labour—premising, that he confines himself almost entirely to the consideration of that of vertex positions; and that he holds there are, essentially, but four such positions, all of them oblique: that is to say, with the opposing diameter of the presentation engaging an oblique diameter of the pelvic brim. Two of these positions are occipito-anterior and two occipito-posterior.

The author almost exclusively confines himself to the consideration of the mechanism of the first position; the left occipito-cotyloid, or if it be preferred, the left occipito-thyroid. A position in which

the occiput corresponds to a place behind the left cotyloid cavity, or left thyroid foramen, and the synciput is opposite the right sacro-iliac synchondrosis.

Prefatory to his observations on the mechanism of this position our author defines certain terms, which he considers are used without scientific accuracy, such as "vertex," "presentation," and "at the brim."

Dr. Leishman would wish us to understand "the sagittal suture in its whole length, and the parietal *bone* (once called os verticis) as far as *its* tuber, as the vertex in midwifery; as by so doing" he "shall be able to term the whole four positions, in all stages and varieties, as true presentations of the vertex." Had our author said, "sagittal suture in its whole length, and *both parietal bones* as far as they can be felt," we conceive he would have been nearer the mark. We confess, however, that in our mind we have never had any difficulty in comprehending the term vertex, that is, in its obstetric sense. We consider "vertex," in midwifery, to mean the whole circumference of the arch of the fetal skull; but that, the quantity of the presenting surface of this arch varies according to the period of the second stage of labour at which we make an examination. Thus, as the head enters the brim, "the vertex" is an ovoid whose long diameter is formed by the occipito-bregmatic diameter of the fetal skull, and whose short diameter is its bi-parietal. When the face has turned towards the hollow of the sacrum, and the occipital end of the oval becomes fixed at the pubic arch, "the vertex" gradually becomes more and more extensive as to its surface (because the face then sweeps the side of the hollow of the sacrum, and the arch of the skull distends the perineum), till at last the vertex may be defined as the complete arch of the skull—the long diameter of the oval now being the *occipito-frontal*, and the short the bi-parietal. Even though from obliquity a portion of the fetal head below one or other of the extremities of the bi-parietal diameter, may occupy the pelvic space, we have never experienced any difficulty in appreciating the mechanism of the four positions by thus defining the term "vertex." We think it a mistake to be over-refined as regards this term.

Now, with respect to the word "presentation," a term, it appears, which has caused our author much trouble, he says:—"That the difficulties are even greater, and the confusion amongst various writers more embarrassing," with regard to this term than with respect to the term vertex. "If," he continues, "we imagine a

series of planes radiating from a common centre in front of the pubes, and passing to the posterior part of the pelvic wall—the upper of these being the floor of the brim, the lowest that of the outlet—the parabolic curve which passes through the centre of these is manifestly the axis of the pelvis. Now, if we are forced to name a *point* as the *presentation*, we might, with some show of propriety, adopt that definition which limits the presentation to that part on the surface of the child's head through which the axis of the pelvis passes. But the objection to this is to be found in the fact that it is practically impossible to determine this with anything approaching accuracy; and, therefore, we must adopt, for our information and guidance in practice, some more simple, if less accurate, idea of the term." We confess this appears to be much ado about nothing. Why confine the definition to a point through which a certain axis passes, even if one could do so with scientific accuracy? That point must be, after all, only a point *on the presentation.* Moreover, we cannot agree with Dr. Tyler Smith's definition of this term, which our author seems forced to adopt, viz.:—"That it would be best to define the presenting part, in every kind of cranial position or presentation, as *that portion of the fetal head felt most prominently* within the circle of the os uteri, the vagina, and the ostium vagina, in the successive stages of labour." We object to this definition because it still confines itself to a particular spot on the presentation, viz., so much of it as is "*felt most prominently.*" Why make a difficulty where no difficulty exists? The presentation, say in the case we are about to consider, is "the head" the *order*, "vertex." No very minute definition is required of this word, whether relative to the head or any other part of the fetus. We would understand presentation to mean, whatever portion of the fetus engages the os uteri, the brim, the cavity, or the outlet of the pelvis, and as much as can possibly be felt, or is capable of being felt, at any of these situations.

The next, and last, term which our author conceives to be vaguely defined is, "at the brim." He considers "that the head should be described as 'at the brim' until its bulk has passed this part, which does not take place until the head has begun to experience some resistance from the floor and converging walls of the pelvic cavity." We consider, instead of rendering matters more simple, this definition of the term increases our complexity. Should we take this as a true definition, we might give ourselves

credit for delivering a head with the forceps while "at the brim," when in reality the most of it would be in the cavity.

In our mind there can be no difficulty about all the terms in which the word brim is used. For example, the term "head above brim," we consider to mean that the head has, in no part, as yet entered it. Such a condition is peculiarly appreciable in cases of narrow brim. Head "at the brim" means, that the occipito-bregmatic oval has just entered it; and this term is identical with "just entering the brim." "In the brim," when the opposing diameter has unmistakably engaged that circle; and this is a situation not so frequently found as the following, viz., "passing the brim." We consider the head to be passing the brim (not "at the brim") until the cavity of the pelvis has been occupied and the perineum is just commencing to be pressed upon, at which period the head may be said to have "passed" or "cleared the brim."

And now to return to the author's ideas relative to the first position of the head at the brim, his views being grouped under the three obliquities above described in connexion with that position.

First, then, with respect to the obliquities of Saxthorpe and Solayrés, whereby a long diameter of the head occupies an oblique diameter of the brim—in other words, the head is turned on its vertical axis. Here it is essential to quote our author at length, in order to do him justice:—

"That the head, in the vast majority of cases, presents itself at the beginning of labour in a direction approaching to the oblique of the brim, and that as labour advances it passes more decidedly into that diameter, are facts almost universally admitted. There are, however, some obstetricians of eminence, among whom I may mention Cazeauz and Ramsbotham, who consider that the transverse position occurs so frequently as to warrant our retaining it in a system of classification. I am perfectly willing to admit that, with a wide pelvis and a small head, there is scarcely any position that may not occur; but I think the weight of the evidence is entirely against the probability of the transverse position being anything but extremely rare in its occurrence. It is well known to all accoucheurs that frequently (but by no means *always*, as Nægèlé says) the ear may be felt at the beginning of labour immediately behind the pubes; and it is important that the exact diagnostic value of the ear in this situation be exactly determined. On this subject Dr. West, in his essay, has various important remarks, which I have, to some extent at least, had an opportunity of confirming. It is quite evident that this frequent position of the ear behind the symphysis pubis is often

looked upon as evidence that the other ear is in the middle line of the sacrum, and, consequently, that the long diameter of the head is in the transverse of the brim; but, so far from that being the case, he says that on finding, for example, the right ear in this position, and indicating that the face is to the right, we may be sure that the head is oblique and in the first cranial position. I cannot, I confess, go quite so far as Dr. West; but I have, on more than one occasion, introduced my hand when the right ear was in this position, and found the left—not, indeed, as he says, 'at the left ilium, or thereabouts,' but certainly, and very decidedly, to the left of the promontory of the sacrum. This subject requires and deserves further investigation; but I am inclined to believe that the position is in most cases indicative only of that situation intermediate between the transverse and oblique diameters of the brim, which the head so frequently occupies in the early stages of labour.

"It is undoubted that early in labour the position is frequently more transverse than it is at a later period, but it is by no means easy to ascertain what is the cause of this alteration. I am inclined to think that it is determined, to some extent at least, by the shoulders of the child coming in contact with the projecting lumbar vertebræ, aided, it may be, in the case of a living child, by the motions of the superior extremities. It is conceivable, at least, that the motion of the arm of the child should tend to turn the shoulder, and consequently the head, into an oblique position, seeing that the arm next the lumbar vertebræ would find a resistance to which nothing analogous exists on the smooth wall of the uterus. It is certainly difficult to understand how, without the operation of some such cause, the long diameter should turn at so early a stage of labour from the transverse position into one where, taking the soft structures into consideration, it actually has less room."

With respect to transverse positions of the head at the brim, or as it is entering it, we perfectly agree with our author, viz., that such a position may occur when the pelvis is large, out of proportion with the normal fetal head, or when the head is preternaturally small while the pelvis is normal; under either of which circumstances we may have a *variety* of vertex positions, all of which may be said to go for nothing so far as the mechanism of labour is concerned. But when the fetal head and mother's pelvis are in due proportion one towards the other, at full term, it is highly probable—indeed we have observed it repeatedly—that the head always occupies a more or less transverse position *prior* to its entering the brim—*i.e.*, the occipito-bregmatic diameter of the head nearly, *but not exactly*, corresponds to the transverse of the brim. That the opposing diameter of the head, however, occupies an oblique diameter of the

brim when it *is* entering, or *has* entered, this space, is undeniable. Therefore we ignore transverse positions in classification. The fact of the fetal head corresponding nearly to a transverse diameter of the inlet before it becomes engaged therein, may, in some measure, account for an error which has lately been enunciated in our school, viz., that the face of the child in early labour is *always* anterior.

As to the reason *why* the fetal head takes an oblique position, much has been conjectured by various writers; we cannot, however, agree with the suppositions of our author. We do not consider that the shoulders contribute in any way to the arrangement of the head in the oblique position; and we deem it less probable that the motions of the child's arms tend to produce a similar condition. It seems to us that this obliquity may be more easily and satisfactorily accounted for. It must be remembered that in accounting for the mode in which the fetal head enters the pelvic brim, we should take into consideration what effect may be produced by the play of the smooth rounded surface of a movable ovoid body against a similar surface of a fixed ovoid body. The movable ovoid is formed by the fetal head, and the fixed one by the sacro-vertebral angle. This latter encroaches upon the conjugate diameter of the brim posteriorly, overhanging that obliquely-placed plane; but there is at each end of this rounded projection considerable space, in a direction backwards and outwards, corresponding to the region of each sacro-iliac synchondrosis.

If, then, we suppose, as is the case, that a power, acting from above downwards and obliquely backwards, pushes the movable oval into the brim thus coarcted antero-posteriorly, the movable oval will oscillate upon the fixed one, and the end of the former oval which is nearest to one of the ends of the latter will turn into the space there situated, and so apply its long diameter to that diameter of the brim where it is best accommodated, viz., the oblique. Thus in the early stage of the first position, the occiput is somewhat in the anterior half of the pelvic brim, and to the left, while the synciput is somewhat in the posterior half, and to the right; therefore the synciputal end of the head's oval, the movable one, is the end nearest to the right extremity of the oval formed by the sacro-vertebral angle, the fixed one. When, therefore, force is applied by uterine action, the movable oval of the head oscillates upon the fixed one formed by the sacro-vertebral angle, it fills up the space there available, and so comes to occupy the oblique diameter of the pelvis or left occipito-cotyloid.

The oblique diameter of the pelvic brim in the living subject we consider to be the longest, and that which will best accommodate the opposing diameter of the head; so that here we are quite opposed to the author when he says that the head when in the oblique diameter, "taking the soft structures into consideration," has "actually less room than in the transverse."

It is quite true that the transverse diameter of the brim in the skeleton is longer than the oblique, but in the living subject the reverse obtains, and from the very fact of the presence of these soft parts. The muscular structures which occupy the iliac fossæ encroach upon the transverse diameter, and change the shape of the brim into that of a triangle, the base being posteriorly and the truncated apex somewhat anteriorly; therefore the oblique diameter of the brim in the living subject becomes longer than the transverse.

The next point of Nægèlé's touched upon by the author is the biparietal obliquity of the first position, by which the head is turned "upon its occipito-frontal axis" so as to bring the ear towards the left shoulder. Our author tells us that, though he began his "study of the subject with the firm conviction that Nægèlé was right in this particular," he has been, "step by step, driven to the conclusion that he is perfectly wrong." However, Dr. Leishman does not wish us to suppose that in his views on this department of the mechanism he is original. He thus, in our opinion, most correctly argues:—

"In admitting the general accuracy of most of Nægèlé's descriptions, I assume that the fundamental error from which, more than any other, his mistake arose, was an ignorance, at the time he wrote his essay on the subject, of the great obliquity of the brim in respect to the horizon. There must, I think, have been remaining in his mind some remnant of the old idea of the *horizontal* brim; for it must be remembered that his attention was not directed to the subject of the relation which the pelvis bears to the trunk and limbs until some years after the date of the publication of his paper on the mechanism of parturition. If the brim were, indeed, parallel to the horizon, or nearly so, the fact of the finger meeting the parietal bone in the vicinity of its tuber would be clear and irrefragable evidence of the so-called lateral or biparictal obliquity of the head. But if we do not allow ourselves to lose sight of the fact that the brim is inclined at an angle of 60°, and that the vertex, or presenting part, passes downwards and backwards so obliquely as to meet the horizon at an angle of 30°.—even admitting that the right parietal bone

in the vicinity of its tuber is the lowest part in the pelvis—I cannot see how this is to be accepted as evidence of anything else than that the head is advancing directly in the axis of the brim, but very obliquely with regard to the cavity, and still more so with reference to the horizon."

Our author here quotes Nægèlé's opinions, and then proceeds, in a masterly manner, to show up their weak points; and, although he has not afforded us any new ideas as to facts in this portion of his work, yet argues each topic in a way as original as it is clever. With his views we thoroughly agree.

The next subject touched upon is the occipito-frontal obliquity, viz., whereby the occipito-frontal (more properly speaking, the occipito-bregmatic) diameter of the head is made to correspond with the oblique of the brim—in one word, flexion of the head. And here we may observe that our author never seems to acknowledge the existence of the occipito-bregmatic diameter of the head as the opposing one, *i.e.*, the diameter from the occipital protuberance to the centre of the anterior fontanelle. This is the true opposing diameter in the position he is examining, and not the occipito-frontal, which latter is measured from the same point on the occipital bone to the centre of the top of the fetal forehead; a longer diameter than the occipito-bregmatic. The flexion of the head and the depression of the chin on the top of the thorax, is the cause of this being the opposing diameter of the head, and it is the shortest of the head's long diameters. But, as regards the origin of this flexion, our author observes it has never been better explained than by Solayrés. "To understand this," he continues, "it is only necessary to remember that the force is communicated to the head from the uterus and other expulsive muscles through the vertebral column of the child; and again, that it is articulated much nearer the posterior than the anterior part of the base of the cranium. Consequently, if the resistance which the pelvis offers to the advance of the cranium be equal at both ends of the ovoid, it is certain that, unless other forces come into play, the posterior end of the occiput must precede the other; the chin becomes firmly pressed against the chest, and the mobility of the head being thus checked, the expulsive force is applied at a greater mechanical advantage." All this is, no doubt, very ingenious; yet we are under the impression that we could demonstrate how the head occupies this flexed position towards the latter end of gestation, and long before labour has set in.

Our author next proceeds to observe upon the passage of the fetal head through the cavity of the pelvis; and with respect to this portion of his treatise on the mechanism of labour, we are presented with nothing new. Thence we are led to the behaviour of the head as it passes the outlet. Some, it appears, and amongst them Dr. West, consider that the head is born with its long diameter—antero-posterior—exactly in the conjugate diameter of the outlet; whilst Dr. Matthews Duncan asserts, that the "lateral obliquity of the fetal head, when passing through the outlet of the pelvis," was "not described by Nægèlé and his followers," but that it "does occur." Now, Dr. Leishman *proves* that Nægèlé *did* teach this obliquity of the head as it passes the outlet, and that Nægèlé was right in so teaching, the head always passing the outlet in an oblique direction. From the following passages will be gleaned the author's views relative to this part of the process, and also the method by which he arrived at them:—

"In point of fact we may, with perfect propriety, describe here, as Nægèlé and his followers do at the brim, three kinds of obliquity. The first is that by means of which the occiput is forced in advance of the forehead, the latter being arrested at the inferior part of the sacrum; the second causes the long diameter of the head to occupy a position intermediate between the oblique and conjugate measures of the pelvic cavity and outlet; and the third is that which we have just described, which causes the right parietal protuberance, in the position which we are considering [viz., the first], to precede the left in passing the place of the outlet. It is a much easier matter to investigate the position of the head at the outlet than to determine its relations at the brim, as we can in the former case refer the position to real determinate diameters, and not to mere imaginary lines, in which we have, at best, nothing approaching to mathematical accuracy. The manner in which I have studied the positions of the head at the brim is sufficiently simple, and at the same time almost free from the possibility of error. If one end of a cord be held by an assistant in close relation with the tip of the coccyx, and the other be carried along the middle line of the vulva to the centre of the symphysis pubis, this line must indicate, with sufficient accuracy, the conjugate diameter of the outlet, or, in fact, that diameter whose relation to the head chiefly enables us to determine the position of the latter.

"I must premise, with reference to the position of the head which I have observed in this manner, and which I am about to describe, that it must be considered merely as the ordinary position of the head in a labour of the first kind, the relative proportions of the maternal parts and

the head being normal. Putting aside all deformities at the outlet, the circumstances in which—other things being equal—we find these various obliquities most strongly marked are presented in the case of a woman who is above thirty-five years of age, and in labour for the first time; and here, also, by reason of the slowness with which the concluding stage of labour is effected, we can best examine the whole phenomena, including the caput succedaneum. On the contrary, in multiparæ the ligamentous and soft parts are often so relaxed that the head passes through almost—and, I believe, in some cases altogether—directly, without availing itself of any of the obliquities except the first described. What may be called the normal process is intermediate between the two. When the caput succedaneum, or presenting portion of the head, first appears between the vulva, and comes to press upon the cord steadily held in the position above described, a line may be drawn, by means of a camel's hair pencil and a little ink, using the cord as a guide, and carrying it as far over the presenting part as may be possible during the height of a pain. This line being produced in both directions after birth indicates that portion of the head which answers to the conjugate diameter at the time when the head first makes its appearance between the vulva, and is represented by a line drawn from about the middle of the right limb of the lombdoid suture, over the vault of the cranium, to the most projecting part of the left division of the frontal bone, or a point slightly external to this. This line crosses the saggittal and coronal sutures, the former at a point much nearer the anterior than the posterior fontanelle. At this period the right parietal protuberance may be felt behind the tuberosity of the right ischium, while the corresponding point on the left parietal bone may be felt considerably higher, near the inferior margin of the sacro-sciatic ligament, and on the level with the tip of the coccyx."

We have quoted this passage at length, as we could not in our words lay before our readers the author's opinions so clearly as he does in his own.

Dr. Leishman now flies off at a tangent to the consideration of a most important subject, namely, the treatment of labour towards the termination of its second stage; the great question being—"Should the perineum be supported?" but as we have already occupied considerable space we shall postpone our review on this and the concluding chapter of his work, about which we have a great deal to say, till the next Journal.

Practical Dietary for Families, Schools, and the Labouring Classes. By Edward Smith, M.D., LL.B., F.R.S., &c. London: Walton & Maberly. 1864.

The above work, says Dr. Smith, "is intended to be a guide to heads of families and schools in their efforts to properly nourish themselves and those committed to their care; and also to clergymen and other philanthropists who take an interest in the welfare of our labouring population. It is essentially practical and popular in its aim, and, therefore, contains directions rather than arguments; but at the same time it is based upon the most advanced state of the science, and, except in the exclusion of many technical terms, is scientific as well as popular."

In accordance with this programme few authorities are cited, the chief being chemical ones, such as Messrs. Lawes and Gilbert Professor Playfair, and M. Payen.

Part I. treats of "Foods," and is divided into three chapters. Chapter I. treats of "the elements of food which the body requires." Here are popular, but correct, dissertations on the entrance of food and its uses within the body; on the emission of waste from the body; on the composition of the structures of the body; and on the quantity of the elements of the body required daily. The importance of diffusing correct notions among the public on these matters can scarcely be overrated; and it is due to Dr. Smith to say that he has done this part of his work well and wisely. We can understand the difficulty he must have felt in popularizing so scientific a subject as that of Chapter I.

Chapter II. gives a summary statement of the elements of the body which can be supplied by food; while Chapter III. treats of the qualities of foods. Under each head in this chapter we find brief statements respecting the origin, nutritive qualities, preparation, and cooking of the various kinds of food. Thus, under Section I.—Dry Farinaceous Foods—a great deal of useful information is given about wheaten flour, the relative value of wheat grown in various climates and latitudes, the usages of millers in mixing the various kinds, the value of the bran, the market prices of various kinds of flour, and the reasons for those prices; also, the nutritive values of various kinds of wheat, and the mode of preparing flour as food. The best mode of baking, the economy of baking at home or buying bread, and the age at which bread should be eaten, are all discussed with simplicity and clearness. For example, at p. 43 we read:—

"It is often asked whether it is better to bake at home or to purchase baker's bread. Assuming that it is convenient to bake at home, it cannot be doubted, I think, that it is better to do so. If the flour be good the bread will be unadulterated; it will keep longer than baker's bread, and the flavour [will] be generally preferred. On the other hand, it must be stated that sad or heavy bread is sometimes produced at home; the baking is less uniform than at a bakehouse, and if any portion be underbaked it is indigestible; whilst baker's bread can be obtained in many districts of uniform quality throughout the year. When, however, home-made bread can be always well made, and the flavour is approved, it will generally be more healthful to provide it."

Respecting the age at which bread should be eaten, Dr. Smith objects to the use of new bread, because it is less digestible than the stale article. This indigestibility of new bread, he thinks, is owing "to its greater tenacity leading to less perfect mastication;" and "is not so much due to any chemical quality" as "to its physical constitution." He then proceeds as follows:—"After this period [the first day] the changes proceed more rapidly in baker's than in home-made bread, so that the former will often taste sour on the third day, and will then have lost much of its agreeable flavour; whilst home-made bread will remain sweet and agreeable in flavour for a week, and during that long period [will] have exhibited no change other than increased dryness and solidity. I think the plan of thrifty housewives in this matter is based upon correct observation, viz., that baker's bread should not be eaten until the second day, and rarely after that period, whilst home-made bread may be eaten on the second and third day, and extended to the fifth or sixth day." Oatmeal, rye and barley, maize, rice, peas and beans, sago and arrowroot are also treated of in this section.

Section II. of Chapter III. treats "of fresh vegetables." At the head of this class stands the potato, which is referred to with due respect. We are told of the various kinds of potatoes, the best kind of soil for growing them, the best mode of cooking and peeling them, and the weight of them which alone would supply the daily nutriment required by a man. This is stated to amount to "about 6 lbs. in reference to the carbon, and 8 lbs. in reference to the nitrogen."

Green succulent vegetables are considered under one head. Parsnips are made to rank next to potatoes in nutriment, and are followed by carrots, Swedish turnips, onions, and common turnips.

Section III. SUGARS.—The various varieties of sugar, their

modes of refinement, its fattening properties, and the most economical mode of using it, are here fully discussed. "A medium price of 4½d. to 5d. per lb. is the most economical quality." Treacle is also mentioned, and its nutritive value given. It "has the same curing properties as sugar, and is largely used in America for that purpose."

Section IV. FATS.—Olive oil, butter of various qualities, salt and fresh, dripping, lard and suet are duly noticed; and it appears "that whilst butter is the most universally prepared separated fat which is accessible to the inhabitants of this country, it is by far the dearest; and that whilst dripping is the least obtainable it is by far the cheapest."

Section V. MEATS.—Dr. Smith here takes it for granted that a certain portion of meat is a very useful element in a dietary, and does not discuss the views of vegetarians, respecting which he refers to his work, *Health and Disease as influenced by the Cyclical Changes in the Human System.* Lond. 1861. Butcher's meat occupies no small share of attention; and as regards cooking it, he affirms that the object is not to change the composition or nutritive value of the meat, but to present it to the palate in a form which is agreeable, and to the stomach in the form most fitted for digestion. "Hence as small a portion as possible of it should be destroyed by the heat, or removed by the water, and no part should be made much harder than it was before the heat was applied." Boiled or stewed meat, when properly cooked, in all probability is more digestible than roasted meat; and in some of Dr. Smith's experiments it was found "that thirty per cent. of all the solid matter left in meat liquor was salts of the greatest value in nutrition." The relative monetary value, and the due exercise of economy in the purchase of joints are minutely and most usefully entered into; and respecting the South American beef recently imported into these countries, and the preserving process patented by Mr. Morgan of this city, Dr. Smith remarks:—

"I think it very doubtful if the South American beef, as at present imported, will be accepted as food even by our poorest classes. The specimens which have been sent to me have been exceedingly dry, and by no process of cooking could they be rendered agreeable food. It is true that in a given weight they contained far more nitrogen than is found in fresh meat, but that was owing to the juices having been evaporated by the drying process; and as the fibre is hard, and can be masticated only with difficulty, it is impossible to admit that nitrogen in that form is at

all to be compared with the same element in fresh meat. Hence the statements as to the nitrogen which it contains are no evidence of the nutritive value of the meat. If it can be brought to this country in a comparatively moist state, without its having been much salted, and with a fair proportion of fat to the lean, it will doubtless be a great boon to the masses of the people. How far the preserving process, so ingeniously applied by Mr. Morgan, will answer this purpose yet remains to be fully proved; but if it should succeed in preserving the meat, the quantity of salt which is introduced, and the comparatively short time in which the meat must remain ere used, will not deteriorate the food to so great an extent as now occurs in an ordinary process of salting. So far as it has yet been tried I think it a very valuable process."

We next find mention of bacon, tripe, cow-heel, sausages, and black puddings. Concerning black puddings, which are prepared from the blood of animals, Dr. Smith states that the best kind is prepared from *pigs' blood, groats, and pork fat;* and he refers to the strong repugnance to the use of blood which still exists among many, chiefly in consequence of the Scriptural prohibition to the Jews. This prohibition, we may ourselves observe, is by many Christians believed to extend to us all;[a] and Dr. Smith considers that the immaturity of blood renders it an undesirable food.

Section VI. treats of fish; Section VII. of gelatine; Section VIII. of eggs; and Section IX. of cow's milk. Under this last head we find minute information about new milk, skim-milk, butter-milk, and whey; and Section X. treats of Cheese.

Section XI. Tea, Coffee, and Chicory.—Here Dr. Smith recommends that tea should be prepared by a weak infusion, and drunk in small quantities, after the Chinese fashion. He states that tea is *useful* to the corpulent; the over-fed, after a full meal; at the end of the day, when food has accumulated in the system, when digestion and other changes proceed slowly; for the old; for hot climates; for the sedentary; for those who do not perspire freely; for those who eat much starchy food; for soldiers on the

[a] The Mosaic law, regarding the use of swine's flesh, things strangled, and blood, appears to be founded on sound sanitary principles; when we recollect the recent discoveries regarding entozoa in pigs, the tendency of the consumption of the flesh of these animals to predispose to cutaneous disease, and the injurious properties of blood in the diseases of that fluid.

The decree of the Synod of Jerusalem, recorded in the Acts of the Apostles (xv. 23–29), abolished the obligations of the Mosaic law on Gentile converts, except in the prohibitions regarding things strangled, blood, and fornication, which are expressly continued. According to some of the best critics the word πορνεία, translated "fornication," (Acts xv., 29) should be more correctly rendered *pork*, or *swines' flesh*.

march in hot climates; and as a restorative in cases of drowning; or wherever it is desired to increase the respiratory functions. Further, he observes that tea is *hurtful* in the absence of food, after a long fast, to the poor and ill-fed, the spare, and the young. It is not adapted to sustain exertion, to prison dietaries, to low temperatures, or to hot climates, when the appetite is defective, and the skin active, or to those who perspire too freely; neither should it be taken with our principal meal. Coffee Dr. Smith regards as more fitted for breakfast, while he thinks tea more fitted for the requirements of the body at night.

Section XII. Alcohols.—Respecting ardent spirits, Dr. Smith says:—"The proper place for these compounds is as medicines, and as such their value may be as great as their power; also as luxuries, but not as foods, and they should not find any place in mere dietetic arrangements." On Wines he remarks:—"I do not think that wine can be regarded as a necessary food, but on the other hand I am convinced that its use is quite unnecessary in the ordinary conditions of health." Beer, and porter, and cider, and perry are noticed; and Section XIII., on Condiments, concludes Part I. In this last section it is stated that, "the required quantity of common salt is from ¾ to ½ oz. daily."

Part II. Dietary, consists of three chapters, and an appendix. It commences with Chapter IV. The Dietary of Families. The statements here made are addressed exclusively to those who are able to obtain, and do obtain, a suitable quantity and variety of food for their families, and to whom extreme economy in the selection of food is not of any importance. The remarks contained in Section I. on Dietary in Infancy, are specially valuable. Clear instructions are given to mothers and nurses, and common mistakes pointed out. The same observations apply to Section II., on Dietary in Childhood, in which the quantity, quality, variety, mode, and time of administration of food are discussed at length, as well as in Section III., in which the Dietary in Youth is dwelt on, with particular reference to the hours of meals, and the use of tea and alcohols. Section IV., Dietary in Adult and Middle Life, not only contains practical teaching, but also bills of fare suitable for adults and middle-aged persons. Notes are given for those *who dine at a late hour;* for those *who cannot eat much breakfast;* for those *who are of feeble constitution;* for those *who lead a sedentary life;* for those *who suffer much anxiety;* for those *who make much exertion;* for *wet nurses and nursing mothers;* for those *who labour in the*

night and rest during the day, e.g., readers, compositors, and others employed in printing offices; for those who wish *to increase*, and for those who wish *to decrease in weight.* A good many pages are devoted to the cases of the spare and fat persons just noted. Those who wish *to increase* in weight are advised to use new milk, sugar, fat, highly-fed meat, "the addition of two or three teaspoonfuls of brandy or rum to the milk or the chocolate several times a day, and the use of good and new home-brewed ale." Those who wish *to decrease in weight* (attend, all ye disciples of Mr. Banting) are advised to increase waste and to decrease supply. To secure the latter desideratum very little or none of the following articles should be used, viz.:—Milk, fluids generally, butter, lard, dripping, suet, oil, sugar, flour, and almost everything that people like to eat and drink. A fixed form of dietary is given, but it is too long to transcribe to our pages; and the "training" necessary to accomplish the same object is delineated, with special reference to King, Heenan, and that brutal pastime which the savage and degraded spirit of this nineteenth century calls "the noble art of self defence."

Section V., Dietary in Old Age, concludes Chapter IV.

Chapter V. Dietary in Schools.—We shall not spoil this most useful chapter by quoting any of it. It ought to be all transcribed, did space admit; or, better still, it ought to be re-printed as a pamphlet, with the notes on the dietary for young persons, in Chapter III., and circulated by the thousand. Would that schools were properly *inspected* as regards dietary. Had this been so, Mr. Dickens would never have written *Nicholas Nickleby*, to show up to an indignant public Mr. Wackford Squeers, of Do-the-boys Hall, and his amiable partner, who, in administering the treacle and sulphur to the boys, to take away their appetites, argued, that she served them and the economical interests of the academy at the same time

Chapter VI. treats of the dietary and family arrangements of the labouring classes, and contrasts, in Section I., the present mode of living of a family—infant, young children, wife, husband, single young men, and women, and youths—with "the most suitable dietary," as given in Section II. Section III. gives "the best arrangement of meals," and Section IV., at much length, "Specimen and proposed Dietaries." Chapter VII. gives copious directions for the management of Cooking Depôts in Section I., and of Soup-kitchens in Section II. The Appendix for the poor, is, perhaps the most valuable part of this book. It consists of copies of

proposed handbills for populard istribution by parochial clergymen and medical men. A very copious Index concludes this volume of 265 pp., small 8vo.

In connexion with the subject of food for the labouring classes it may be well to remind our readers of a series of valuable papers in former numbers of this Journal, in which the Rev. Professor Haughton, in conformity with the experience of the mass of mankind employed in manual labour, in all ages and countries, urged that men employed only in manual or routine bodily labour are sufficiently well fed on vegetable diet, while the *opus mentale*, as opposed to the *opus mechanicum*, requires a better quality of food.[a]

We most sincerely recommend this book on Practical Dietary to the perusal and *digestion* of every class in the community. The Prime Minister will get most useful information from it; the clergyman who uses it will become *popular* and *useful* at the same time; the physician will find good prescriptions in it for the treatment of wearying individuals mis-called *patients;* and the peasant, if he can but read it and act on its directions, will become a happier and a healthier man.

Ligature of the Left Common Iliac Artery; being the Second Operation in Ireland, and the First Successful Case of it.—By William Hargrave, A.M., M.B.; Professor of Surgery, R.C.S.I., &c. Pamphlet.

The facts of this very remarkable case may be very briefly epitomized as follows:—

The patient, a man, aged forty-three, had the usual symptoms of aneurism in the left iliac fossa. The tumour had been observed for about six months, and finally attained a diameter of five inches. It was somewhat triangular in form; the apex running into the common iliac artery, and one side dipping down into the pelvis. Compression by Carte's apparatus, by L'Estrange's, for compressing the abdominal aorta, and by the finger, were each tried, and found ineffectual, even with the aid of chloroform, opium, digitalis, restricted diet, &c. Compression on both distal and proximal portions of the main arteries connected with the tumour was also tried, with the same want of result. Direct pressure on the tumour and flexion of the thigh at the hip-joint also failed; so also did the

[a] On the Phenomena of Diabetes Mellitus. Aug., 1859 and 1860.

sedulous use of ice; nothing therefore remained but the ligature of the common iliac artery. This artery seems to have been tied in thirty-two cases previously to Mr. Hargrave's; of these but six recovered. Whether Mr. Hargrave's case is to be considered successful or not our readers must decide for themselves.

The vessel was ligatured on the 29th April, 1865. The line of incision was eight inches in length, and reached from the point of the last rib to the centre of a line drawn from the spine of the ilium to the symphysis pubis. The peritoneum gave no trouble, separating more readily than in the dead subject, and bringing with it the ureter. There was nothing further of note in the operation itself, if we except the great sensitiveness of the genito-crural nerve, which lay upon the common iliac artery, and required some little manipulation to separate it. The embarrassment sometimes caused by the intestines bulging over the line of wound was prevented by gently rolling the patient towards the opposite side.

On the ninth day some pulsation returned in the aneurism, but without bruit or thrill; on the twenty-ninth day the ligature came away; the discharge from the wound almost ceased. On the thirty-first gangrene of the outer part of the foot set in; this slowly increased, and was at the last accompanied by pelvic abscess of large size; change of air and everything that skill could suggest in the way of food or medicine, was tried, yet the man finally sank on the seventy-third day, mainly owing to hemorrhage from the portion of the abscess in the right pelvis. The wound remained flabby and disinclined to heal throughout.

Post mortem examination confirmed the opinion previously formed, that this was a case of aneurismal varix, the aneurism communicating with the external iliac vein by a well-defined oval opening of a quarter of an inch in diameter.

Mr. Hargrave claims this as a successful case, so far as ligature of the vessel, and believes that the fatal issue is due to pyemic causes, resulting from the accidental gangrene of the foot. The *post mortem* showed that as far as the sac was concerned the process of cure was far advanced; and even if the compilers of statistics should hesitate to class it among the recoveries, it is to be hoped they will not overlook the satisfactory parts of the operation, so far as the safe application of the ligature and its subsequent coming away without hemorrhage are concerned. It gives encouragement to other surgeons to follow Mr. Hargrave's steps in the performance of this brilliant and daring operation.

1 *Orthopraxy: the Mechanical Treatment of the Deformities, Debilities, and Deficiencies of the Human Frame.* A Manual. By Heather Bigg, Assoc. Inst. C.E.; Anatomical Mechanist to the Queen and Prince of Wales, &c., &c. London: Churchill, 1865. Crown, 8vo, pp. 709.

2 *A Practical Treatise on Rupture: its Causes, Management, and Cure, and the Various Mechanical Contrivances Employed for its Relief.* By T. P. Salt, Birmingham; Anatomical, Surgical, and Orthopedic Mechanician; Surgical Instrument Manufacturer to the General and Queen's Hospitals, &c. London: Churchill, 1865. Crown 8vo, pp. 112.

We associate these works in one notice because they are both written by surgical-instrument makers; and we believe the publishing of such books by instrument makers is not only a mistake on their part, but calculated to be injurious to suffering humanity. We do not say one word as to the impropriety of instrument-makers, who have received instructions from surgeons as to the fabrication of surgical apparatus, publishing descriptions of these with remarks on the cases in which they may be employed, with a view to attracting customers or "patients" to their shops; but on the part of humanity and of medical science we protest with all our might against cutlers and instrument-makers, whether they be Associates of the Institution of Civil Engineers or not, undertaking the treatment of disease, and by screws, and springs, and ratchet-wheels forcing and contorting the body into various shapes, independently of all considerations of vital or constitutional peculiarities.

In another article in this present number of the Journal we have dwelt on the anatomy, pathology, and treatment of spinal deformities, and shown in how great a degree these depend on constitutional causes, and require in their treatment all the skill and judgment to be derived from the patient study of disease. Mechanical apparatus is no doubt an important part of the treatment, but still it is a secondary one; and certainly the greatest injury that could be done to the manufacturers of such apparatus would be to attempt to elevate them into medical practitioners.

While thus objecting to these works, we do not deny that much valuable information may be obtained from them; but it is somewhat remarkable that in two instances at least—hernia and prolapsus of the uterus—neither of the authors makes mention of the instruments most commonly used and most valued by Dublin surgeons.

PART III.

MEDICAL MISCELLANY.

Reports, Retrospects, and Scientific Intelligence.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.[a]

Dr. M'Dowel, President.

Disease of the Supra-Renal Capsules.—Dr. Hayden said he had the honour of submitting to the society an example of Addison's disease, which presented some peculiar, and as it seemed to him, exceptional features. The patient was a woman fifty-eight years of age, and was the mother of a large family. She was admitted into the Mater Misericordiæ Hospital on the 9th of last October. The history which was obtained from her was the following:—She had enjoyed comparatively good health from infancy up to two years before her admission, with the exception of occasional cough and expectoration. About two years previously she suffered from a cough of a more decided and severe character, with expectoration. She complained of severe pain in the right scapular region, which lasted three weeks, and was so severe that she could scarcely breathe whilst it continued. Three months subsequently to this time, that is twenty-one months previously to the date of Dr. Hayden first seeing her, she observed a slight discolouration of the chest and arms, and subsequently of her face. A month previously she suffered for the first time from epigastric pain, accompanied with retching and vomiting, irrespectively of taking food. One week before he saw her she was attacked with diarrhea. She occasionally expectorated a little blood; and about three weeks before the date of her admission threw up a large quantity of florid blood. When he saw her first she was exceedingly weak. She could hardly stand erect, so great was her debility, without support; and when she attempted to do so, had a swimming in the head, and was about to fall. The pulse was 96, regular, but exceedingly feeble. The woman complained of pain in the epigastrium, with constant retching, and was unable to retain any food,

[a] These reports are furnished by Dr. R. W. Smith, Secretary to the Society.

solid or fluid, in the stomach. Her tongue was, nevertheless, moist, but slightly furred. The face presented an almost uniform nut-brown colour; less so, however, upon the cheeks and upon the forehead. The sclerotics were pearly white, and the upper part of the chin was likewise white, as were also the margins of both lips. The neck, chest, and upper part of the abdomen were covered with large brown blotches, with intervening spaces of uncoloured skin, which were perfectly white. The lower part of the abdomen, within a space bounded by a line extending from an inch and a-half above the umbilicus on each side to the crest of the ilium, and below by the crest of the pubes and Poupart's ligaments, was perfectly white, as were also the entire of the lower extremities, with the exception of the upper and inner part of the thighs, and adjacent portion of the perineum, which were of a deep brown colour.

The anterior aspect of the upper arms was likewise uncoloured, as was the anterior aspect of the elbow, the forearm, and the hand, with the exception of a large blotch which lapped over from the posterior surface of the arm to the anterior on the radial side. The dorsal surface of the upper arms was deeply discoloured; as was also the dorsal surface of the forearm. The discolouration extended to a short distance on the back of the hand, and on its ulnar side to the root of the little finger. Between the roots of the fingers, on the dorsal aspect, there were large dark brown blotches. With this exception, the posterior surface of the hand was uncoloured. The soft palate was discoloured. On examining the chest, he satisfied himself that the percussion note was perfectly normal throughout. There was a total absence of precordial dulness. The action of the heart was regular, but exceedingly feeble, and unaccompanied with murmur or unusual sounds of any kind. Respiration was loud all over the chest, and accompanied with mucous râles in both cases.

On examining the abdomen he discovered enlargement of the liver, but the surface of that organ was smooth. No other evidence of organic disease was discovered. Judging from the appearance of the patient, from the peculiar symptoms she presented, both positive and negative, as well as from the condition of the blood, an examination of which by the microscope showed a great preponderance of the white corpuscles, the red corpuscles cohering in rolls, he made the diagnosis of Addison's disease, notwithstanding that the discolouration was partial. The patient's condition continued much the same until the 19th October. From that date she continued to improve up to the 1st of November. She was able to take food and drink; to sleep, and was in every respect much better; the diarrhea had been checked, and the vomiting had ceased. On the 2nd of November he found on visiting the hospital that the patient had that morning, and before she had taken her breakfast, vomited up about a pint of white grumous matter. This was repeated on the 4th of November in less quantity; and on the evening of that day

he discovered, for the first time, intermittence of the heart's action, and likewise of the pulse. The patient's tongue, which had been hitherto moist, became dry and glazed looking, as likewise the soft palate. She was now unable to take what she had been accustomed to use, port wine. Strange to say, however, she desired to have some porter this day, and retained it on her stomach, as she did several days afterwards. On the 11th of November aphthæ appeared on the edges of the tongue, and on the palate. On the 16th the pulse was down to 66, and intermitting.

On the 19th November she had a slight attack of syncope, and later in the evening was attacked with excruciating pain in the abdomen, causing her to cry most piteously during the night; and on the following morning he found her lying in bed with her legs drawn up, as if suffering from peritonitis. The abdomen was exquisitely tender, but there was neither flatus nor fluid distention. She was in a semi-comatose state, but when spoken to answered rationally and collectedly. The tongue was still glazed and dry. On the 27th November she had a slight convulsive attack, and twitching of the features; and two hours afterwards died in a state of syncope. The examination of the body, made a few hours after death, presented the following appearance:—The abdomen was covered with a layer of fat of very considerable depth. There was no wasting whatever; the body was that of a woman in more than average good condition for her class and years. In the abdominal cavity he found the peritoneum perfectly healthy. The omentum, the mesentery, and the retro-peritoneal tissue were loaded with firm yellow fat. The liver was considerably larger than it should be, but otherwise was healthy, except that its capsule was somewhat opaque and thickened.

The gall bladder was distended with bile, which was not to be wondered at, considering that for three days before her death the patient had taken no food whatever. The spleen was healthy in all respects. The stomach was very much reduced in size, being contracted, as well as the intestinal canal, owing to the patient not having taken food for so long a period. The mucous membrane of the stomach was slightly vascular, but free from abrasion, and otherwise in a perfectly healthy state. The kidneys were larger than they commonly are, especially the left kidney. An examination of this, on section, showed fatty disease in a very advanced stage. The cortex of the kidney seemed to be replaced by fat. The supra-renal capsule on that side was considerably enlarged. It was three times the average size of this body in the healthy adult. It was mottled on the surface. In the centre, or medullary portion, which should be void, there was a deposit of lardy-looking fatty material, which on examination with the microscope, was found to be pure fat. The cortex was occupied by a more solid and yellowish matter, which was found to possess all the characters of tubercle, consisting of fat-molecules,

which, on solution by sulphuric ether, left an amorphous granular stratum with imperfect cells.

The left semi-lunar ganglion was enlarged and sent off to the corresponding capsule several large nerve-filaments, which coursed over, and were then lost in the substance of the capsule. The right kidney was not so large as the left, but it presented also fatty disease. The capsule was scarcely so large as the left, but in section it presented an appearance precisely similar to it, except that the medullary, as well as the cortical portion, was occupied by a yellow tubercular-looking matter. There was a deposit of fat upon the surface of the heart, but the valves were healthy, except the mitral and tricuspid, which were a little thickened, but still quite competent to close the respective orifices. The lungs were found partially emphysematous. In the right lung some tubercle existed, disseminated through the organ, which was firmly attached to the chest-wall, and it became torn in process of removal. The left was likewise adherent, but less firmly, to the thoracic walls. The patient, two years previously, had complained of severe pain in the right scapular region, where the lung was found so strongly attached to the costal pleura. The number of tubercular nodules was greater in this situation than elsewhere, and some of them were in the stage of softening.

This case presented some features of interest because exceptional. In the first place, this was a case of partial discolouration only. He knew of only one other case of this kind where the discolouration was partial, to the extent of the lower extremities being entirely uncoloured, and where a *post mortem* examination showed disease of the capsules. That was a case recently reported by Mr. Holt in the *Lancet*, and reprinted in the *Medical Press* on the 1st of November last. In Dr. Hughes' case, and the one which he (Dr. Hayden) had lately brought before the society, there was complete discolouration. It illustrated the connexion between the tubercular diathesis and disorganization of the supra-renal capsule, and went to prove, what he had elsewhere ventured to urge, namely, that irritabilty of the stomach and discolouration of the skin were invariably associated with disorganization of *both* supra-renal capsules. It also illustrated what he had before remarked, that the left capsule was generally in a more advanced state of disease than the right. Lastly, the enlargement of the nerves sent from the semilunar ganglion to the diseased capsule, tended to support the views of Dr. Habershon, who holds that the irritability of the stomach and the disease of the supra-renal capsules are placed in the relationship of effect and cause through the hypertrophied connecting nerves. There was nothing in the stomach itself to explain such obstinate irritability. The brain was healthy, as were likewise the pelvic organs. It should have been observed that the urine was examined shortly after this patient's

admission—it was 1019 sp. gr., acid in reaction, and contained a good deal of albumen.—*December 2nd*, 1865.

Enchondroma.—Mr. Porter exhibited a specimen of enchondroma, or cartilaginous tumour, which was developed on the index finger of the left hand of a woman aged thirty-seven. It commenced on the inside of the finger six years ago, and gradually enlarged until it had attained a very considerable size. Its growth was unattended with pain, and the skin was healthy and quite movable over the tumour. He amputated the finger between the first, or proximal phalanx, and the second. The surface of the morbid growth resembled cartilage in appearance and consistence, but the interior contained a good deal of osseous material, against which the knife grated on cutting into the tumour.—*December* 2, 1865.

Ovarian Tumour.—Mr. Tufnell said the case of ovarian tumour which he was about to bring under the notice of the society might be of interest to the surgeon in a practical point of view, as few who saw the enormous size of the tumour which he now exhibited could imagine that the question could arise as to whether ovariotomy should be attempted or not. Any one who saw the solid mass upon the table, which weighed nineteen pounds, would think there could be no doubt upon the subject; yet, so masked was it by the accompanying symptoms that there was considerable difficulty in deciding not to operate, especially as the woman was constantly entreating to be delivered from the tumour. The patient from whom it was taken was thirty-eight years of age, married, and the mother of ten children. She was admitted for the first time into the City of Dublin Hospital on the 11th of July last. She stated that she had enjoyed very good health until about four years before, when she first noticed a hard small tumour, which she could grasp in her hand, in the right iliac region. This gave her little or no inconvenience until a year since, when the abdomen began to swell, and anasarca of the feet to follow. Upon admission into hospital in July she had all the symptoms of confirmed ovarian dropsy. The walls of the abdomen were tense; percussion in the anterior and lateral portions yielded a dull sound, while in the lumbar region only was there any resonance; and here, though less dull, it was not clear. The body was wasted, and the upright position obliged to be maintained in consequence of dyspnea from pressure upon the diaphragm. The abdomen was more tense in some parts than others. Thus, from the umbilicus downwards, and especially towards the left iliac fossa, this state obtained, and to such a degree centrally, as to necessitate the operation of tapping being performed two inches above the navel instead of in the usual situation. Paracentesis was demanded in consequence of the extreme difficulty of breathing. Twenty quarts of thick, glairy, brownish-coloured fluid of an extremely

viscid character were drawn off, so thick, indeed, that though the tube of the canula was unusually large, it took upwards of an hour to run off, and at last failed to flow altogether, although the cyst was manifestly not empty; the latter portion of the fluid hanging in a thick gelatinous string out of the mouth of the instrument. No inconvenience followed the operation, and she left the hospital upon the 29th of July, the case being regarded as one unfit for operation, and the patient then satisfied with the relief which she had obtained by the tapping. Upon the 4th of September she returned to the hospital, the abdomen being again distended to a considerable degree; but it was not until the 20th of October, or just three months from the preceding operation, that paracentesis became absolutely necessary. She was now tapped, and twenty-four quarts of fluid drawn off—this time of much thinner character and lighter colour; so different, indeed, was its degree of fluidity that through the same canula as before employed, the quantity named (twenty-four quarts), was run off in less than twenty minutes. This tapping took place through the same spot as the preceding one, viz., two inches above the umbilicus, and was followed by an attack of circumscribed peritonitis. She left the hospital, however, upon the 1st of November. Upon the 9th of November she returned, for the third time, presenting similar appearances as before, with the exception that the veins on the anterior surface of the abdomen were much more turgid. The girth of the belly at the umbilicus was now fifty-two inches; and the measurements from the pubes to the navel, one foot, and from the anterior superior spinous process to the navel, eighteen inches. The parietes in the pubic region were infiltrated with serum, and so œdematous that they descended between the thighs like a dew-lap. The inferior extremities were anasarcous throughout, the left one more so than the right. Dyspnea was now so urgent that she was again tapped, and nineteen quarts of fluid drawn off; this secretion being thinner even than the last—of a colour resembling thin port wine and water. Its specific gravity 1013; neutral in reaction, and coagulating firmly both by heat and nitric acid. This tapping afforded relief, but not such as before, for she was now suffering also from dyspnea, in consequence of effusion into the right pleural cavity; the chest upon this side was universally dull; slight hemoptoe was also present; some blood too was passed by the bowels, which were obstinately costive. After suffering greatly from this combination of disease, she died upon the 27th of November—up to the last praying to have the tumour removed.

The *post mortem* examination, which was made seventeen hours after decease, afforded the following results:—The upper extremities and chest were greatly emaciated; the belly protuberant, being forty-seven inches round the navel; and the legs and thighs anasarcous. The peritoneum contained a considerable quantity of straw-coloured fluid. The ovarian

tumour presented a pearly white glistening appearance, with very large vessels permeating its surface from below upwards. The abdominal walls were adherent to the front of the cyst for the space of six inches; below this appeared a flattened dense surface the size of a cheese-plate, and looking much like pancreas flattened out; below this a solid or semi-solid mass filling both iliac fossæ, but especially the left, the abdominal walls being adherent to it, and requiring much force to separate them. Firm adhesions existed also in both hypochondriac regions, whilst the transverse colon and omentum were so completely agglutinated to the tumour that the vessels inosculated. In the lumbar regions adhesions also existed, and the small intestines were united to the tumour in spots. The uterus was normal in size, and healthy, as was also the left ovary. The right ovary merged into the tumour, and was insensibly lost. The pedicle was about two inches long, and not thicker than an umbilical cord. It contained two sets of vessels, and was diaphanous in the centre. The weight of the tumour after removal and the emptying of the large cyst of its contents, was nineteen pounds. The intestines were healthy; the liver large and fatty, and very pale, with the gall-bladder empty. The kidneys were both perfectly sound. The urine during life had been scanty, and loaded with lithates; its specific gravity being 1035.

The chest exhibited marked hydrothorax on the right side. The pleural cavity was filled to distention with thin bloody serum; and the lung compressed into one-seventh of its natural size; when cut into, it presented numerous tubercles in the miliary form. There was no sign of pleural inflammation or exudation of lymph. The heart was pale, and there was some effusion of serum into the pericardial sac. Dr. Barker having examined a portion of the tumour under the microscope, said that it exhibited a cheesy, albuminous aspect without structure, a few blood discs, and fat cells.—*December* 2, 1865.

Fibrous Tumour.—Mr. Collis exhibited a fibrous tumour which he considered of interest from the unusual locality in which it grew. Mr. Paget, in his work on tumours, states that unless in connexion with the periosteum of the jaw fibrous tumours are not often found in connexion with bone or periosteum. The specimen which he now presented was removed on Wednesday last from the upper arm of an elderly woman. It sprung from the periosteum, in the situation of the insertion of the deltoid muscle; and it possessed interest not only from the situation in which it was found, but also as regarded the question of prognosis. Mr. Paget said, that while fibrous tumours, as a rule, are innocent, still examples are found, occasionally, which are truly malignant, though not differing in structure in any appreciable manner from those that are innocent. Mr. Paget gave instances of three such tumours occurring in different situations of the body, and Mr. Collis did not doubt that by

careful observation instances of others might be found. It was of immense importance that the surgeon should be able to make some tolerable guess as to whether such a tumour as this, in such a locality, were innocent or not. There were three points in this case which led him to conclude that the tumour was possibly of a malignant character. In the first place the attachment of the tumour to the skin was extremely close; the skin had all that dimpled, puckered appearance generally observed on a scirrhous tumour; the second point was, that this tumour did not appear to be in any way encysted or cut off from the surrounding tissues, as occurs in fibrous tumours of the uterus. In this case the tumour ran into the neighbouring tissues, after the fashion of malignant disease, whether cancerous or not. The coraco-brachialis, triceps, and probably a portion of the biceps and deltoid were encroached upon by the morbid deposit. The periosteum was immensely thickened and very adherent to the bone; the latter, however, did not seem diseased. The third point which led Mr. Collis to conclude the tumour to be malignant was the character of the pain. All tumours connected with the bone will be more or less painful, and the pain will be greater at one time than another; but the patient in the present case described the pain as of a shooting, lancinating character, and this, taken in connexion with the other features of the case, would help in the diagnosis as to whether the disease was malignant or not. He had removed the whole of the tumour, and laid the bone bare, and it would now be a matter of considerable interest to watch the result. He therefore now put the case on record in order that hereafter the Society might have an opportunity of testing the prognosis by its future progress.—*December* 2, 1865.

Rupture of the Aorta.—Dr. G. F. Duffey, Assistant-Surgeon to the 24th Regiment, communicated the following case, and laid the recent specimen before the Meeting.—The specimen which I have the honour of laying before the society was taken from the body of a soldier in the 24th Regiment, whose case is briefly as follows:—

He was thirty years of age, strong, and apparently healthy, but of rather a sallow complexion; he had eight years service, was married, and of temperate habits. He had an attack of rheumatism in 1862, and there was a small cicatrix of a venereal sore on the prepuce, showing that he must have had syphilis prior to enlistment, as there was no admission for that disease against him in his medical history sheet.

He was in the regimental hospital comparatively recently (during the months of July and August) for an injury of the right ankle, but was discharged on the 21st of August. Neither during the time he was in hospital, or at any other period, did he complain to the surgeon of the regiment or myself, of anything being the matter with him except the sprained ankle; but his widow states that he had complained to her of

pain in the left side of his chest for the last two and a-half years, and that during the week preceding his death this pain grew worse, his appetite failed, and he slept badly.

Still, however, he did not become sick; and up to the moment of his death was actively engaged with his duties. He was in the act of pumping water when he suddenly fell backwards; some of his comrades immediately ran to his assistance, and, seeing his congested face and protruded eyeballs, thinking he was in an apoplectic fit, poured some water over him, and carried him to the hospital (a distance of only eighty yards from where he fell) where the Deputy Inspector-General of Hospitals, Staff Assistant-Surgeons Maunsell and Thompson, and myself were at the time. He was then quite collapsed; his face was pale, and there was no pulse perceptible He gasped two or three times, and expired within five minutes from the time he fell.

On making the *post mortem* examination I found that the pericardium was filled with clotted blood, the weight of which was nine ounces The aorta was greatly dilated, but there was no distinct aneurismal sac. Its coats in some places felt thick and hard, and in others very thin and soft. On removing the areolar tissue its surface appeared greatly congested, and in some places yellow, cheesy-like patches were observed. On slitting up the vessel extensive and thick deposits of atheroma were seen; in some places the internal and middle coats were ulcerated, and in others little pouches, with excessively thin parietes, projected from the sides of the artery. Great difficulty was experienced in finding the rupture through which the blood had escaped into the pericardium. At last, however, after a long search, in which I was assisted by my friend, Dr. Bennett, we found a minute capillary opening leading into the pericardium from a little above the sacculus of the left sinus of Valsalva; the heart was perfectly normal.

This case, sir, I thought might be interesting to the society on account of the large extent of disease, which must have existed for a long time, and which led to so sudden and fatal a termination, being present without the coexistence of any important or acute symptoms to call the physician's attention to it. The position of the rupture is also, I believe, unusual. Arterial diseases should be particularly interesting to the army medical officer, as from the vagueness of the symptoms occasionally accompanying them, especially aneurism of the thoracic aorta, which, as Professor Stokes has remarked, may be one of the most latent of diseases, a man otherwise appearing, as this man did, in good health might be considered as a malingerer, and a fatal termination hastened by the performance of too arduous duties.—*December* 2, 1865.

Disease of the Mitral Valve, &c.—Dr. Law presented to the society a specimen of mitral, combined with aortic valve disease, the condition of

the former admitting of free regurgitation. The patient, a servant, aged twenty-one, was admitted into Sir Patrick Dun's Hospital, on the 12th of August, complaining of extreme oppression of breathing and of palpitation of the heart; he had general dropsy, his limbs being enormously swollen and his face very much puffed. The history he gave of himself was, that three months previously he had been ill from oppressed breathing, and had the same swelling he now complained of, but became better, and continued so until ten days before his admission to hospital. On examining him there was a strong double murmur heard behind the sternum, and also another single abnormal sound below the left mamma and external to it, and distinctly, too, between the scapulæ. He had the peculiar thrilling pulse of aortic valve disease, and there was increased dulness in the pericardial region. The hand placed over the heart discovered a distinct purring ("fremissement cataire") sound in that organ. On examining the patient in a sitting posture there was dulness on percussion on the left side of the chest inferiorly, and here there was no respiration heard. The man was rather unwieldy from his dropsical condition, but he was induced to go on his hands and knees, when it was found that where the chest was dull before it became clear, and where the respiration was before inaudible it was now distinctly heard. The diagnosis was regurgitant mitral valve disease, with aortic valve disease and effusion into the left pleural cavity. The limbs, although very much swollen, did not pit on pressure, and his general condition led Dr. Law to suspect albuminuria; the urine on being heated exhibited albumen in considerable quantity. His case was nearly hopeless when he came into hospital, but he made a short temporary rally. Such patients are often very fidgetty and restless; it is often difficult to keep the clothes on them or keep them in bed. This man could not be induced to keep himself covered; he got up and exposed himself, and thus got fresh cold; the dyspnea became more urgent, and dulness was found on percussion, not only on the posterior left but on the posterior right side. He became gradually weaker, the action of the heart more feeble, the abnormal sounds less marked, the pulse lost its thrilling character, and he expired from asthenia.

The examination of the body showed extensive disease of all the aortic valves. They were thickened, and on their surface was a large fibrinous deposit; there seemed to be both interstitial and superficial deposit. The mitral valve was a good deal thickened, and some of the chordæ tendinæ were ruptured. The auriculo-ventricular opening was unusually large.

It might be a question whether the fremissement cataire was caused by the aortic or by the mitral valves; but the direction of it induced Dr. Law to connect it with the condition of the aortic valves. The heart weighed 24 ounces.

In reference to the complication of aortic and mitral valve disease he

had frequently observed that the symptoms of aortic valve disease predominated in some instances, and in others those of mitral valve disease; and he had, not unfrequently, observed that in the same case these symptoms alternated with each other.

A question had been addressed to Dr. Law, on the occasion of his making a communication on mitral valve disease admitting of free regurgitation, as to the murmur, if it were not a soft murmur? Several elements entered into the formation of these murmurs—the density of the fluid, the nature of the valvular disease where valvular disease existed, and the strength of the organ. Chlorosis was the type of the soft murmur. M. Beau tried the experiment of injecting water into a tube, and he heard a soft bruit de soufflet; he thickened the fluid and the bruit ceased. That was what was done in treating chlorosis. Treatment thickened the blood by increasing the proportion of red corpuscles in it, and, as in M. Beau's experiments, caused the bruit to disappear. The condition of the valvular lesion would also influence the peculiar bruit, as would also the dynamic energy of the heart. There was one instance, at the Meath Hospital, where a person who had heart disease came in with fever, and during the fever the murmur disappeared, but returned when the patient got well of the fever. Most murmurs either disappear altogether or, at least become very faint before death.—*December* 9, 1865.

Cirrhosis of the Lung.—Dr. Jennings exhibited a specimen of this disease, taken from the body of a man, aged forty-five, a bricklayer, and exposed to great variations of weather and temperature in the exercise of his trade. About five years since he had been engaged in setting steam boilers, and then contracted what he described as a "severe cold," attended with profuse hemoptysis, which continued for three days, and in a less degree, for some time afterwards. After about a fortnight he resumed work, though still suffering from cough and expectoration, until his admission into hospital on the 16th September, 1864, at which time his cough was constant and distressing, and attended with muco-purulent expectoration and hemoptysis. Much dyspnea and lividity of the face were also present. The physical symptoms were—general dulness of the right side, marked immobility during respiration, inability to lie on the left side or back. The heart was completely luxated to the right side, the apex being felt and seen beating regularly below the right nipple. The pulse was eighty, and regular; the skin cool. The right side of the thorax was unusually dull in front and behind, but less markedly so under the right clavicle, where loud pectoriloquy or bronchial respiration, with loud cavernous râles, and cavernous vocal resonance, were audible. The sounds were also distinct posteriorly along the right side of the spinal column.

The chest being exposed, the eye was instantly arrested by the drooping of the right shoulder, which, when measured, was found to be one inch lower than the opposite, and also by considerable sub-clavicular flattening. The measurement from the ensiform cartilage to the mesial line behind gave as the result, fifteen inches on the right and sixteen inches on the left side. Thoracic motion on the diseased side was scarcely, if indeed at all, perceptible. The left side was preternaturally resonant, and evidently was emphysematous. The expectoration was viscid, of a yellowish colour, and abundant.

The *post mortem* examination disclosed the following conditions:—On opening the thorax the left lung was seen transgressing the mesial line, and overlapping the heart, which was altogether displaced to the right side of the sternum. The right lung was converted into a small, hard, and tough mass, of a fibro-cartilaginous consistence. On making a section of it, the organ was seen traversed by widely dilated bronchial tubes, ending, even near the surface, in chambers and cavities of very considerable size, more than one of them being capable of containing a large nut. These latter cannot be mistaken for strumous vomicæ, being lined by a dense and whitish membrane. The radiating lines of contractible cellular tissue are also strikingly displayed. Next after phthisis, one of the diseases with which cirrhosis of the lung is most likely to be confounded is, I need hardly say, carnification of the organ, the result of sthenic pleuritis which has terminated in absorption and subsequent ligation of the collapsed organ by the consolidation of the effused lymph. But yet in the great majority of cases, and where the patient has been seen at an early period, the different history of each, added to the distinctive physical symptoms peculiar to each, is sufficient to establish a diagnosis. In every case, however, after death, the pathological characters, of cirrhosis, namely, the obliteration of all traces of ultimate cell tissue, the dilatation of the bronchial tubes, the conversion of the organ into a tough fibro-cartilaginous substance, and its contracted volume, are sufficient to remove any doubt that may have existed during life.—*Dec.* 9, 1865.

Cirrhosis of the Lung.—Dr. Foot exhibited a specimen of cirrhosis of the left lung, taken from the body of a man aged twenty-nine, who died in the Meath Hospital of hemoptysis on the previous day. He had had pulmonary symptoms, dating from an attack of bronchitis two years ago, but no profuse hemorrhage from the chest previous to the fatal one, although his expectoration had been occasionally streaked with blood. The day before his death he passed blood from his bowels; the following day, while he was up and dressed, he was seized with a sudden flow of blood from the mouth, which ceased for about two hours, then recurred, and continued till he died from exhaustion.

On examining the body, its general colour was a blanched waxy-white; hypostatic congestion existed on the nates and posterior parts of the trunk to almost the usual degree. Devergie has denied the presence of this *post mortem* phenomenon in death from hemorrhage; but according to Casper it is present after every kind of death.. Cadaveric rigidity was very strongly marked.

On raising the sternum and costal cartilages adhesions were evident between either lung and these parts; the right lung seemed large and hypertrophied; it projected through the opening instead of collapsing; it also transgressed the median line towards the left side; the left lung was small, and retracted deeply into the left side of the chest., drawing the heart to a certain degree after it; the left side of the chest, viewed externally during life, had been comparatively flattened. Both lungs were adherent to the ribs and diaphragm, but the left especially, which it was necessary to cut out of the thorax; it was much reduced in size, firm and leathery to the feel, non-crepitant, and sank in water; on section it displayed the dilatations of the bronchial tubes characteristic of cirrhosis; and in its apex was a cavity, the size of an acorn, full of blood. The right lung was congested and emphysematous, enlarged in compensation for the contraction of its fellow, and bearing on its outer convex surface the impressions of the ribs; in its apex was a cavity the size of a walnut, containing a black coagulum—a string-like process of which passed into a branch of the superior division of the right bronchus; the trachea, glottis, and pharynx were occupied by a blackey and firm coagulum. In the stomach was a mass of coagulated blood, and about four ounces of thick tarry fluid; in various parts, also, of the small intestiness thick pultaceous-looking blood was seen.

The specimen exhibited afforded a good example of the disease to which Dr. Corrigan gave the name of cirrhosis of the lung, and which has more recently been called bronchiëktasis. The want of harmony in volume of the lwo lungs, the altered position of the heart from concentric displacement, the limitation of the morbid process to one side of the chest, are pathological features of this disease. Its association with tubercular deposit, of which there are evidences in each lung, is unusual; it seriously complicates the diagnosis, and very probably accelerated the profuse hemoptysis which so suddenly terminated the case.—*December 9, 1865.*

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.[a]

TWENTY-EIGHTH ANNUAL SESSION.

Dr. M'Clintock, President.

ADDRESS OF DR. CHURCHILL, PRESIDENT FOR THE PAST SESSION, ON RESIGNING THE CHAIR.

Gentlemen of the Obstetrical Society,—Before I resign this chair, in which your kindness placed me last Winter, it is my duty to lay before you a summary of the proceedings of the past session, so that at the beginning of another—the twenty-eighth—we may, as it were, count up our gains, and see where we stand.

The simple reading of the list of papers, or other contributions, will show that, as a society, we have not been idle; that the last session has added its quota of valuable information to that of former years. It will, I trust, also stimulate every member to contribute his share, be it ever so little, to our increasing store. If we cannot all make discoveries or educe general laws of primary importance, each in his sphere of observation may note with accuracy physiological or pathological facts, and the registry of such facts will be a valuable possession for our profession.

During the past—the twenty-seventh—session I find that, besides the opening, the society held six ordinary meetings, which were fully attended, and at which nineteen communications were contributed by the members; not always essays, but what are of equal value, specimens of malformation or disease.

Our indefatigable secretary, Dr. Kidd, read a valuable paper on dysmenorrhea; Dr. Bennett exhibited a very remarkable specimen of dropsy of the Fallopian tubes; Dr. Cronyn exhibited a fetus, with congenital hernia cerebri, upon which Dr. Foot subsequently made an admirable report to the society; Dr. Cronyn also read a valuable paper on vaginal lithotomy.

Passing on to more strictly obstetric subjects, you will recollect Dr. Cronyn's instructive paper on rigidity of the os uteri as a cause of delay in the first stage of labour; Dr. M'Clintock's admirable investigations into the effect of ergot of rye upon the child; and Dr. Byrne's essay on fatty and hydatigenous degeneration of the placenta.

There were three communications of value connected with obstetric operations:—Dr. Kidd gave a very learned account of the induction of premature labour, and stated the result of his experience as to the value of fluid dilators; Dr. Halahan exhibited an ingenious perforator, of his own invention; and Dr. Telford showed to the society the uterus and

[a] These Reports are supplied by Dr. Geo. H. Kidd, Secretary to the Society.

placenta of a woman who had been delivered by version for placenta previa, and who died subsequently.

Three admirable papers were read on diseases or accidents following labour. For example:—Dr. Denham related five cases of tetanus, and a case in which an attack of laryngitis proved fatal after delivery; Dr. Banon gave us the results of his operations for the cure of vesico-vaginal fistula, showing an unusual amount of success; and Dr. Lalor contributed a most valuable paper on puerperal insanity.

We were indebted to Professor Haughton for a report of his visit to the lying-in hospital of Moscow; to Dr. de Ricci for a report upon a treatise of Dr. Bribosia on the use of opium; and also to the same gentleman for a communication from Dr. Purdon on the use of the bisulphites.

There was only one paper on infantile diseases, and that was from the untiring pen of our learned colleague, Dr. Henry Kennedy, on hydrocephalus.

Gentlemen,—As most of these papers have been, or will be, published in the journals for those who wish to consult them, I feel that it would be trespassing too much upon your patience were I to enter into a detailed analysis of them. You know their value, and will have no hesitation in agreeing with me that the past session is not the least successful of our many successful ones.

If no brilliant discovery was announced, a number of important facts, and a great amount of valuable, because personal, experience were put on record, and added to that store upon which scientific progress depends.

No doubt can exist, then, that the past session has been a step in advance, and to many, advancing by one or two steps at a time, seems very slow progress. Yet it is not really so; and as years pass over, and we compare the past with the present, we are better able to estimate the advance which the combined labour of many workers has secured.

Most of our present members are too young to remember the formation of this society, but I and some few present assisted at its birth; and if we take the twenty-seven years it has existed, adding thereto a few years, still within my own recollection, and review the continuous development of our branch of the profession, we shall find not only that a remarkable progress has been made, but that it is pretty much embraced within that period.

It may not be without both interest and instruction if we take a cursory glance at the improvements which have taken place in that space of time, say about thirty or thirty-five years, and I will try to be as little tedious as I can. I feel the more pleasure in doing this because, as I believe, the first move in the right direction came from the Dublin School of Midwifery; and, moreover, that this hospital and this society have contributed a very large portion of the "materiel" upon which this advance has been based.

As the most important and influential means for advancing obstetric science, I reckon the existence of such an hospital as this, under whose hospitable roof we are now assembled. The enormous number of cases therein attended year after year, affords sufficient ground for general deductions; the many exceptional cases tend to define the limits of these general conclusions; whilst the great practical experience and the matured judgment of those who hold charge for so many years, enable them not merely to give sound instruction to the younger members, but on a more extended scale, and with a larger class, to benefit and enlighten the entire profession. In proof of this, I have only to refer you to the standard works of Collins, E. Kennedy, M'Clintock and Hardy, Sinclair and Johnston, together with the valuable monographs published in the past years by the masters and assistants of the hospital. The publication of such extensive statistics, although not a novelty on the continent, was so in Great Britain; partly, at least, because even now there is no other hospital in Great Britain as large. But of late years various contributions from England and Scotland of the same kind, and notably one from Dr. Hall Davis, have appeared, and we add them, and hope each year to add more to the extensive series we already possess. But whilst I claim for these extensive statistics very great value, it must not be supposed that all our different questions can be settled by them. At the most, conclusions drawn from them are but approximations—often very close approximations—to the truth. In many cases this is sufficient for our purpose, and when it is not quite satisfactory it may be the best at our command. We should neither undervalue nor over-estimate the deductions from statistical tables.

The next most important agent of progress, I think, has been this society. Whether the very valuable reports to which I have alluded would all have been published but for the stimulus afforded by this society no one can say; only one appeared previous to its formation; but assuredly the greater number of the valuable monographs founded upon them would not. It is when men engaged in similar pursuits are brought together in this way that individuals are encouraged and stimulated to submit their experience to each other. What might have remained vague floating opinions, under this test assume a definite expression, and are subject to careful consideration before submitting them to such a tribunal. "As iron sharpeneth iron, so the countenance of a man his friend by hearty counsel," and we have all experienced the personal benefit which the intercommunion of such a society as this affords.

It must have afforded high gratification to Dr. Evory Kennedy, the founder of this society, to see such a recognition of its value as was afforded by the formation of similar societies in London and Edinburgh. As in our own case, we can see the benefit which has resulted in the more

rapid progress of our science, and in the accumulation of published records of that progress.

The last agency I shall mention as having contributed to the advance of science is of a different character altogether, and yet deserving of being so considered, I think. I allude to the use of anesthetics, and more particularly to Sir James Simpson's memorable discovery of chloroform, for this purpose. I do not allude to its value in the prevention of pain in ordinary cases; but if you consider the facility it gives to the operator, by the absence of struggle—to the prevention of shock, which is so dangerous an element in all serious obstetric operations—and finally, to the facility it affords for a minute and otherwise painful investigation of various cases—you cannot doubt that it has powerfully aided in the acquisition of knowledge.

Well, then, we have our hospital as a source of extended experience; as an obstetric school for the young; and by its minute, ample, and classified statistics, affording to those more advanced data for the solution of various difficult problems; so, on a smaller scale, have Edinburgh, London, Glasgow, and many of the provincial towns in England, who have followed our example also in publishing statistical reports. Again, as a stimulus and a record, we have our Obstetrical Society, and so have Edinburgh and London; and it is probably due to this increased activity that so many valuable works, whether systematic or of a more limited range, have been published in addition to the statistical reports.

With these agencies actively at work, it may naturally be asked whether we can show corresponding results? Whether there has been any marked increase to our knowledge—any true scientific practical advancement? To enter fully into this question would occupy more time than I can command, and would be a greater strain on your patience then I have any right to exercise, but, I hope to be able to show, in a cursory notice, that such is the case.

Let us first speak of midwifery and then of diseases of women.

1. The anatomy and physiology of the organs concerned in generation and parturition have received a minute and thorough investigation, and their relations to the fetus, mechanically and vitally, have been established more precisely than formerly, and, consequently, natural labour has been recognized as a physiological process—as natural to this system as digestion to the gastro-intestinal apparatus. The inevitable effect of taking this view has been a greater reliance upon the natural powers, and an abstinence from all interference when these powers are adequate to their work.

It is not more than thirty years, I think, since Nægèlé's work was translated into English, and proved a starting point for those investigations, with the mechanism of parturition, which have solved nearly all the questions connected with the subject.

The use of the stethoscope, not only for ascertaining the existence of pregnancy, but the life, sinking, weakness, and death of the fetus comes, I think, very nearly, within the same period. Among the earliest labourers in the field were the late Dr. J. C. Fergusson and Dr. Evory Kennedy, and they left little more for their successors than the clearing up of some doubtful points and the more extended application of their observations.

Again, within this same thirty years, has been developed an increased appreciation of the difference between the first and second stages of labour, as to their respective effects upon the constitution of the mother and the well-being of the child; influencing the practical treatment in natural labour, but far more essentially in prolonged labour, according as the delay is in the first or second stage.

The management of the third stage of labour has undergone little change in Dublin since I was a student; but it seems to be undergoing a modification elsewhere, which consists in the adoption of the Dublin plan of steady pressure and traction by the funis. We all know that this pressure often extrudes the placenta without further assistance, yet this has lately been announced as a discovery by a German accoucheur. I think, also, that it is less usual now than formerly to wait the regulation half hour after the birth of the child, and it has been found that the sooner the afterbirth is away the less the danger of hemorrhage.

2. So much for a few of the points connected with natural labour, in which we must recognize an advance upon former knowledge.

But if the powers and agencies of natural labour be better known and its limits more accurately mapped out, it follows, as a matter of course, that great light must be thrown upon unnatural labour considered as a pathological process. The two leading considerations which determine our practice in deviations from natural labour are now admitted to be:—1, the excessive duration of the second stage; and 2, the bulk of the child as compared with the dimensions of the passages it has to traverse. Upon the fuller recognition of these facts, and their consequences, has been based all the improvements in the management of such cases.

For example, there are certain obstructions which impede the progress of labour; if these only act upon the first stage, having determined that there is no danger in that to mother or child, we endeavour to remove the obstacle, but we do not interfere with the labour.

But let the obstruction be of a permanent kind so as to act upon the second stage, or let there be a want of power entailing an unlimited prolongation of that stage, and we know at once and beforehand that we must interfere, sooner or later, and the exact time will be determined by a comparison of the condition of the mother and the state of the child as ascertained by auscultation. The definiteness of our knowledge has led to more distinct practical aims than were to be found in the teaching or writing of former times.

The mode of interference will be decided chiefly by the amount of obstruction, and here I arrive at what may well be considered as the most beneficial change I have to notice. The stethoscope in enabling us to ascertain that the child is alive has really increased our estimation of the value of fetal life. Knowing the child to be alive, we have no right either to kill it or let it die, if by any means it can be saved without destroying the mother. Thus in all, or nearly all, those cases in which the defect is a want of power, and in those where the obstruction is moderate (the child being alive), the use of the forceps has superseded both delay and the use of destructive instruments—to the great saving of infant life. Any one who takes the trouble to compare the first and last report of this hospital cannot but be struck by the difference. A similar change has taken place in Scotland and England, and the rule is now definately laid down in all recent systems of midwifery. In this country, at least, the credit of the change is primarily due to the late Dr. Beatty, and next to his son, Dr. Thos. Beatty; we may say that the substitution of the forceps for craniotomy, is a decided improvement which has been rendered safe by chloroform and valid by the stethoscope.

Another suggestion, based upon the endeavour to save infantile life, is the substitution of version for craniotomy in certain cases of deformed pelvis. Its proposer, Dr. Simpson, is very sanguine of its extended success, and no doubt that when the deformity is not too great it is of great practical value.

Favourable accounts have been published of the value of the cranioclast and cephalotribe in facilitating the extraction of the mutilated fetus, and so far increasing the safety of the mother, but further experience seems necessary before arriving at any decided conclusion.

Lastly, there are two alternative operations—induction of premature labour, and the Cesarean section, upon which I must say a few words. The first has been rendered, both easier and safer, by the use of the water douche, first proposed by Kiwisch, of Prague. It can also be employed in cases where any other means would be extremely difficult—this is a clear gain of modern times. I think there is ground of hope that our improved mode of treating incised wounds of the peritoneum, as evidenced in the increased success of ovariotomy, will tell upon the operation of hysterotomy, and that a diminished death-rate, from this fearful operation, may be the result. In which case it may, probably, be substituted for craniotomy in extreme cases.

3. The third class, into which I have divided the improvements under consideration, embraces certain complications irrespective of the kind of labour.

Here I may adduce the use of chloroform in epileptic convulsions, which confers a twofold benefit; it not only enables us to effect the delivery promptly and without pain, but it will arrest the convulsions.

Again, we turn with pride and hope to the removal of that opprobrium of surgery—the treatment of vesico-vaginal fistula. Now by the aid of chloroform, the employment of metallic sutures, and the use of improved instruments; it has been established that these cases are not beyond cure. Let me add the hope that the earlier termination of labour by art will, in future, very much reduce the number of these cases.

Further, modern researches have thrown some light upon that terrible scourge of childbed—puerperal fever. Not that we are in possession of the means of prevention or cure, but the general principles which regulate our treatment of other epidemics have been applied to this, and the recognition of the change of type has led to a corresponding change of treatment. The essential character of the worst form has been more clearly established, whilst, at the same time, our knowledge of the local complications has been increased.

Lastly, modern observation has added to our list of puerperal diseases and accidents, some of which, a few years ago, were facts unknown. For example, in works of thirty years ago you will find no description of thrombus of the labia, paralysis in childbed, tetanus, embolism or arterial obstruction, not to mention those, still more obscure, which cause sudden death. Now they are familiar to all.

This, gentlemen, is a very imperfect sketch of some of the improvements in midwifery which appear to me to indicate undoubted progress in scientific knowledge and practice; and now, gentlemen, if I have not tired out your patience, let us turn for a few minutes to the subject of diseases of women, and see if that department has been equally progressive.

The minute anatomy of the unimpregnated organs, their relation to each other, and their position in the pelvis, have been more minutely investigated, and their physiological inter-dependence so far satisfactorily ascertained as to render an intelligent pathology possible. The line of demarcation, thus mapped out, all on the one side pertains to healthy action, all on the other is disease.

And the improved pathology of the present day has been applied to morbid conditions of the ovario-uterine system: reflex irritations, cell growth, depraved nutrition and its results, epithelial and cancerous growths—all find fitting illustrations and afford explanations of different conditions of this important system.

Practical treatment of the various diseases has also kept advancing, whether of a dynamic or mechanical kind. The latter, indeed, has attained so unusual a development that there seems to be some fear that the former may be forgotten. Instruments for dividing or dilating the cervix, for rectifying malpositions of the uterus, or for removing outgrowths, are constantly multiplying, as you all know.

Much of all this is a decided gain, and may compare favourably with

the state of our knowledge and practice thirty years ago. But, perhaps, no test of progress in any branch of our profession is more certain than the accuracy to which the diagnosis of disease has attained. Now, I know of no department of our branch of the profession in which such advances have been made as in the diagnosis of disease. Formerly it depended mainly upon the comparison of symptoms with the results of external palpation and internal digital examination, and how much was left vague or unknown a very superficial acquaintance with books must have taught you.

All displacements but two, all intra-uterine growths, all the superficial diseases of the vagina and cervix could only be guessed at; whereas now they are so brought within our reach that they may be as accurately known as external diseases.

They had, and we have, four sources of information in common, viz., the collation of symptoms, and the evidence deducible from auditory, ocular, and tactile investigation. They understood fully the first of these, and the last, so far as the finger enabled them; but they had only just heard of the stethoscope and the speculum, and not at all of the uterine sound.

But now, we not only avail ourselves of the ordinary use of our eyes and fingers, but we have supplemented them by higher or more extended powers.

I remember well, in Paris, thirty-five years ago, seeing Recamier and Lisfranc use the speculum, which they had recently revived; but almost all the knowledge we have derived from it is of more recent growth, and is due to the labours of Evory Kennedy, Simpson, Bennett, Boivin and Dugès, Becquerel, Aran, Jobert, and others.

Let us inquire now *what* we have gained.

Formerly, leucorrhea, or some equivalent phrase, was the term for all non-sanguineous discharges from the vagina, and it was regarded as resulting sometimes from inflammation, sometimes from debility. Now, every one is aware that the mucous membrane of the vagina and uterus is subject to the same variety of diseases as any other mucous membrane; that you may find simple or granular inflammation of the entire surface, or a part of it; that you may have papular, vesicular, or pustular eruptions in the vagina; or diphtheritic exudation, or excoriation, simple or malignant ulceration of the cervix, granular erosion of the cervical canal, and vascular tumours at the os uteri, as well as small polypi.

The use of the speculum, of one kind or another, renders the diagnosis of these affections easy and sure.

But our eyesight has been further supplemented by the microscope; and although our information is neither so complete nor so precise as it will be, yet enough has been added to our previous information as to the nature of growths and discharges to satisfy us that it will become of

great value in diagnosis. It is quite possible for a good microscopist to detect evidences of cancerous disease both in tissue and in discharges, and mainly by the aid of this instrument the diagnosis between epithelioma and cancer of the cervix uteri is established. In the domain of anatomy, I myself witnessed an instance of its value. You are aware, most of you, that one difficulty in the way of accepting the ovular theory of menstruation is that the number of Graafian vesicles in each ovary seems inadequate to supply one or more a month during the active period of uterine life. It has been suggested that the supply must be kept up by repeated secretion of them by the parenchyma of the ovary. But this is quite unnecessary. Some time ago, my friend Dr. Richardson, of whose great microscopic skill many of you are aware, was good enough to show me a minute portion of ovarian parenchyma, under a lens of very high power, and I saw in that small fragment more Graafian vesicles than by the naked eye you can see in the ovary; enough, and more than enough, to supply the necessities of menstruation and gestation, if the other portions be as richly endowed.

So far, however, our eyes have only explored the canal leading to the womb, and the os uteri, with products obtained therefrom. Of the visible condition of the uterine cavity we have known nothing but that such knowledge would be most valuable and desirable. Nor shall we be long without it. Owing to the recent improvements made in the endoscope by my friend and pupil, Dr. Cruise, a vivid light can now be thrown into this cavity, and I have more than once been indebted to him for a view of it which satisfied me that by this instrument we can at least determine the existence of unusual vascularity and granulation. I hope to have an opportunity of thoroughly investigating the subject, now that we have the means, and I confidently expect that we shall be able to complete our knowledge of the diseases of the internal surface of the uterus, as the speculum has enabled us to do for those of the vagina.

So much for the extension of the power of vision. The sense of touch has also been supplemented by the uterine sound. This long finger, as one may call it, was first introduced into practice by Dr. Simpson, in Great Britain, and M. Huguier, in Paris, without any communication with each other.

Its use is twofold—to penetrate where there is not room for the finger, and to extend beyond its reach. And the result has been the discovery of diseases and displacements previously unknown, and an increased precision given to our knowledge of those previously known.

For example:—By it we can ascertain the dimensions of the os uteri, and canal of the cervix, whether it be unusually narrow, strictured, or contorted, and the exact locality of these affections.

Again, although retroversion of the pregnant uterus has been recognized since the time of Wm. Hunter, no one suspected the existence of such a

displacement in the unimpregnated until it was revealed by the sound. The same may be said of anteversion and lateral flexion.

Moreover, the length of the cavity of the uterus can be measured by it, and so the nature of the uterine enlargement ascertained. The diagnosis of retarded involution is mainly due to the use of the sound.

According to the experience of M. Huguier, with two or more sounds we may take the measure of intra-uterine tumours or polypi, and certainly we can ascertain the mobility or comparative fixedness of the uterus, which in many cases is of extreme importance. It is notoriously difficult in many cases of moderate abdominal tumours to decide whether they are uterine or ovarian, yet this difficulty has been removed by the use of the sound.

So much for diagnosis. Now, if we turn to the treatment of this class of diseases we find equal evidences of improvement.

In the first place, the speculum, which reveals so much of which we should otherwise be ignorant, enables us also to apply our remedies exactly to the part affected, and to use many which would in no other way be available. You may now safely apply caustic solutions, strong caustic, or the actual cautery, with the certainty that the result will be limited to the part you wish.

Formerly, disk and ball pessaries were the only mechanical remedies against displacements; now I need not tell you that pessaries of various kinds, for the different displacements, have been multiplied, so that the puzzle is rather which to choose.

The cervix has been divided for stricture, or dilated by tents; nay, even fibrous tumours have been enucleated or destroyed. Intra-uterine polypi have been reached by the wire écraseur, or when they have descended have been removed by that instrument, instead of the tedious process of the ligature, and subsequent sloughing.

I have already alluded to the operation for vesico-vaginal and recto-vaginal fistula which have been so signally successful.

Lastly, it has remained for our times to witness the success of ovariotomy, and its reception into the domain of surgery.

Gentlemen,—Have I said enough to prove the advance of our branch of the profession within the last thirty years? I hope I have, though my sketch is very short and imperfect, partly from a fear of trespassing too much upon your good nature, and partly from want of leisure. If I have, my object has been attained, and I will conclude with two remarks, directed to the junior members of the society more especially.

First.—If we except the discovery or application of chloroform there is no great stride in all this progress. It has been made step by step, one leading to another. A better knowledge of the anatomy and pathology leading to more care in contriving aids for diagnosis and modes of treatment; a thoughtful consideration of what was wanting

for the detection and elucidation of diseases led to attempts at supplying such means, and a conviction of the imperfection of some led to additional trials until the result was attained. A feeling of the advantage of light, and the possibility of applying it, led to the speculum, and a consciousness of the knowledge that would be gained led to the uterine sound.

Secondly.—As our progress has been gradual, and not the result of brilliant discovery, so the men to whom it is due, with few exceptions, were not men of genius, but men very much like ourselves, with this peculiarity, that they were careful, thoughtful, observers; men who collected facts accurately, and reasoned from them judiciously; men who never spared themselves so that they might discover the truth. Not giants in intellect, though of cultivated minds; they were giants in working, and they "have left their footsteps on the sands of time."

For us all, for the young emphatically, this is the grand secret of success. Work—not for mere money, though you will gain it; not for fame merely, though there is no other way to attain it; but work, because it is given you to do; work, because it is your duty to yourselves, your duty to the profession, your duty to the public, your duty to God.—18*th Nov.*, 1865.

Dr. M'Clintock read the first part of a paper on Rupture of the Vagina, which will be published when completed.—*Dec.* 9, 1865.

On the Treatment of Puerperal Fever.—Dr. Telford read the following paper:—

I purpose to bring under the notice of this society some cases of well marked puerperal fever, occurring in the Lying-in Hospital during the last year, treated by tincture of aconite and anodynes, with the free administration of stimulants.

Case I.—Margaret Hernan, aged forty-four, a strong healthy-looking woman, was admitted to the Dublin Lying-in Hospital on the 17th of March, 1865, having been confined of her thirteenth child early on that morning on board one of the steamers coming from Liverpool. Her labour was quite natural, and the child healthy. March 22nd, her fifth day after delivery, she had a severe rigor, and complained of headache; the pulse was 130, tongue furred, abdomen tender on pressure, lochia suppressed, and the breasts soft and flabby. Ordered a turpentine stupe to the abdomen, to be followed by a large poultice of bran, and to have one of the following draughts and powders alternately every second hour:—℞. Tinct. aconite (Fleming), M V; liq. opii. sed. (Battley's), M X; etheri. chlor., MXX; acqua ad 1 oz. M. ℞. Pulv. ipecac. lo., gr. 5; hyd. c. creta, gr. 2. M. She was also allowed 4 oz. of wine and some arrowroot, with full anodyne at bed-time.

23rd, 10 a.m.—Slept some during the night; still complains of pain

over the abdomen; lies on her back with the knees drawn up; the face has a peculiar congested appearance, which I have often noticed in cases of puerperal fever; pulse 125; bowels confined. Ordered a dose of castor oil and tinct. of senna; to have her draughts repeated; 4 oz. of wine, arrowroot, and chicken broth.

24th.—Is this morning much troubled with constant vomiting, for which two drops of hydrocyanic acid were added to each of her draughts, and 4 oz. of brandy given.

Evening, 7 p.m.—Seems very low and weak; complains much of flatulency, restlessness, and extreme thirst; tongue dry and brown; pulse 120. Ordered turpentine enema, full anodyne, and 6 oz. of brandy.

25th.—Vomiting still continues; tympany rather increased; pain on pressure over the abdomen; draughts to be repeated; 6 oz. of wine, some ice, for the purpose of allaying thirst, and checking the vomiting, and to have an anodyne at bed-time.

26th.—Vomiting has ceased; other symptoms much the same; repeat medicines.

27th.—Seems something better; tympany much less; pulse 120. To continue her medicines, and have one ounce of the following mixture three times a day :—℞. Tinct. ferri mur. dr. iii.; infusi quassiæ, 8 oz. M.

30th.—Looks much better this morning; her expression greatly improved; tongue cleaning towards the edges; pulse 100.

April 3rd.—Is getting much stronger; draughts omitted. To continue the iron mixture. Convalescence from this time progressive; discharged April 17, just one month from admission.

Case II.—Ellen Moseley, aged twenty-three, a delicate-looking woman, was confined of her first child November 2nd, 1865; her labour was natural. On the second day she complained of some pain over the uterus, which was preceded by a rigor; tongue clean and moist; pulse 120.

Nov. 5.—Pain on pressure greatly increased; lochia scanty and foul; no appearance of milk in the breasts; tongue still clean, pulse 140. Ordered the draughts and powders as in the first case, a stupe and poultice to the abdomen, and to have the vagina syringed with water containing some of Condy's disinfectant fluid.

Evening, 7 p.m.—Symptoms much the same, except the pulse, which had fallen ten beats in the minute. Ordered full anodyne, and two ounces of wine.

6th.—Pain on pressure still acute; tongue dry and brown; complains of great thirst, and profuse perspiration; pulse 130. To have her draughts repeated; wine 4 oz.; to be allowed some ice to suck; arrowroot, chicken broth, and jelly.

7th.—Continue medicines; symptoms much the same.

Evening, 7 p.m.—Patient very low; abdomen tympanitic. Ordered an anodyne, with half a drachm of spirits of turpentine; to have her poultice repeated, and to get 4 oz. of wine.

8th.—Complains very much of vomiting, which seems to distress her greatly; abdomen very tympanitic, and extremely tender in the left inguinal region; pulse 120. Ordered a blister to the abdomen, her draughts, with two drops of prussic acid added, a turpentine enema, and 4 oz. of brandy.

Evening.—Vomiting still continues; the vomited matter being ejected without any effort; the blister has risen slightly. Ordered a poultice to blistered surface; a full anodyne, with turpentine; 6 oz. of brandy, and a bottle of Seltzer water.

9th.—Vomiting stopped, and tenderness something less; pulse 120, tongue cleaning; draughts to be repeated; wine 4 oz.; bottle of Seltzer; and to have an ounce of the following mixture three times a day:—℞. Tinct. mur. iron, dr. iii.; infusi quassiæ, 8 oz. M.

Evening.—Weak and faint; pulse 120. Ordered 6 oz. of wine, and full anodyne.

She now went on very well for some days, when she had a second rigor on the 17th of November, accompanied by tenderness over the abdomen, and a troublesome short cough. To have a poultice to the abdomen; her draughts repeated; 4 oz. of wine; and the following draught at bed-time:—℞. Sol. mur. morphiæ, dr. i.; acid, hydrocyanic m. ii.; aquæ ad. 1 oz. M.

18th.—I found her something better in the morning; tenderness not so much complained of; abdomen tympanitic; pulse 120; medicines repeated, and 6 oz. of wine.

On the 20th she was attacked with troublesome diarrhea, for which she was ordered half-drachm doses of Belloc's charcoal, with five grains of Dover's powder, every three hours, and 6 oz. of wine. This treatment succeeded in checking the diarrhea. The only troublesome symptom which now remained was tympanitis; this also gradually subsided, and she is now quite convalescent.

Case III.—Ellen Farrell, aged twenty-one, was confined of her first child November 20th, 1865; labour was quite natural, being completed in twenty-one hours. On the morning of her third day she had a rigor, which was attributed to the coming on of the milk, as the breasts were full and painful; the uterus was enlarged, and tenderness complained of on pressure; pulse 120. Ordered camphor and Dover's powder, of each five grains, three times a day, and to have a poultice over the uterus; anodyne at bed-time.

24th.—Pain on pressure on the abdomen very much increased; lochia suppressed; breasts still somewhat distended; face hot and flushed;

tongue furred; pulse 130. To have a turpentine stupe to the abdomen, followed by a poultice; one of the aconite draughts three times a day; 4 oz. of wine, and an anodyne at bed-time; arrow root and chicken broth.

26th.—Pain on percussion still continues; abdomen tympanitic; tongue covered with a white fur; pulse 120. To continue treatment, and have a turpentine enema, which was repeated for the next three days, owing to the continuance of the tympany.

30th.—Patient much improved; tongue cleaning; and the pulse much less frequent.

From this period the treatment consisted of the administration of tonics and nutritive food. She was discharged, quite well, December 8th.

Case IV.—The case which I am now about to relate derives its chief interest from the masked character of the symptoms in the commencement of the disease. Mary Dillon, aged twenty-two, was confined of her first child November 5th, 1865. On the second day after delivery she complained of acute pain in the right hip and thigh, which was greatly relieved by an anodyne liniment.

8th.—Complains of some pain on pressure on the abdomen; skin hot and moist; tongue furred; and the pulse 120. Ordered the aconite draughts; stupe and poultice to abdomen; wine 4 oz.; and anodyne at bed-time.

9th, 10 a.m.—Pain of abdomen much diminished; pulse 110. Continue treatment. She now went on very well for four or five days, when she was removed to the convalescent ward, her symptoms then being those principally arising from weakness; the pulse was quick; skin hot; tongue slightly furred; and she took her food with some relish, and seemed very hopeful of herself. Ordered ℞. Tinct. mur. iron, dr. iii.; infusi quassiæ, 8 oz. M.; 1 oz. three times a day; wine 4 oz.

14th.—She had a smart attack of diarrhea, for which various astringents were ordered, and 8 oz. of wine. This treatment kept the diarrhea in comparative check till the 18th, when it set in in a much more severe form, with mucous stools, very much resembling those in dysentery; the stomach was irritable, but the administration of hydrocyanic acid checked this symptom; tongue coated, and the pulse varying between 130 and 140. Various plans of treatment were tried to check the diarrhea; solid opium, anodyne enema, acetate of lead, and opium, Belloe's charcoal, &c., &c., but all without effect. Brandy was also given largely.

On the 20th the abdomen became tympanitic; stools passed under her; the face assumed a peculiar pinched look; countenance very anxious; and the pulse very rapid and weak. She gradually sank, and died Nov. 23rd, the 18th day after her confinement. The last two days she was supported, I may say, altogether by brandy.

Autopsy ten hours after death.—The surface of the body was greatly emaciated. On opening the abdomen a large quantity of serous fluid, mixed with flakes of lymph, escaped. On further laying it open we were surprised to find the intestines matted together, and a large quantity of purulent matter in the lower part of the abdomen. The uterus was healthy, nor was there a trace of ulceration in the intestines, as we expected.

The details of these cases, and the favourable result of the practice adopted, viz., three recoveries out of four, would seem to prove that the administration of the tincture of aconite had a beneficial effect, from its action both as a sedative and anodyne, lowering as it does the heart's action without injuriously depressing the vital powers; occasionally it has an aperient action, which, however, does not appear to act detrimentally. Of course I need not tell the members of this society that a patient under the influence of aconite should be very carefully watched.—*9th Dec.*, 1865.

Ovariotomy,—Dr. P. C. Smyly exhibited the injected, dried, and inflated ovary removed from the patient whose case is recorded at page 10.—*13th January*, 1866.

On the Use of Galvanic Pessaries.—Dr. Kidd read the following paper, introducing it with some complimentary remarks as to the title conferred by Her Majesty on the inventor of the galvanic pessary:—

On the 26th January, 1853, Professor (now Sir James) Simpson read a short paper, before the Obstetrical Society of Edinburgh, on "Imperfect Development of the Uterus, giving rise to Amenorrhea, &c.," and stated that "he had seen, in some of these instances, the wearing of an intra-uterine galvanic or zinc and copper pessary, gradually increased in size, followed by the best results, and even occasionally by cure of the amenorrhea."

Having been induced by these observations to make use of galvanic pessaries in several cases, I have thought it well to relate to the society some of the results I have obtained. The first case I used them in was one of amenorrhea from imperfect development of the uterus, the imperfection being due rather to injudicious treatment at the commencement of puberty than to any congenital defect. When menstruation first began the patient of whom I speak got into a cold bath, which checked it immediately, and it did not again appear for more than twelve months. When it next occurred the lady, who was still very young, and not warned as to the care she should take, again checked it; and after this it recurred only at intervals of many months, till, her general health beginning to fail, she was placed under the care of the late Dr. Montgomery. Under the treatment prescribed by Dr. Montgomery, of which

horse exercise was an important part, the general health improved, and menstruation took place every second or third month.

I was consulted in April last. At this time the lady, who was about twenty-five years old, had been nearly two years married, but without any improvement as to the regularity of menstruation. Of a dark complexion, with a good figure, and well-developed bust, she had very excellent general health; and, living at the time in a hunting country, she was in the habit of accompanying her husband once or twice a-week in following the hounds. She told me menstruation seldom occurred oftener than once in two months, and when it did occur lasted only a few hours, and was so scanty in quantity as to scarcely stain her linen. On examination I found the mammæ and external organs of generation well developed; but the uterus was small, the cervix small and conical, the fundus anteverted, the os so small that the smallest catheter could not be introduced. The ovaries I had reason to believe well formed, not only from the general good development, but from the circumstance that one of them lay in the recto-vaginal pouch of the peritoneum, and could be distinctly traced, of a natural size, by the finger placed in the vagina.

I confess I had very little hope of being able to induce regular menstruation in such a case. My first step was to dilate the os and explore the uterus, which I did by means of sea-tangle, but not without considerable difficulty, as even the smallest sized tent could not be introduced within it more than a few lines at a time, so that it was necessary to dilate it, bit by bit, introducing a small tent one day as far as it would go, and putting a sponge in the vagina to keep it from falling out; then passing another tent further the next day, till at the end of a week I got the whole canal of the cervix opened, and was able to introduce a sound, and explore the cavity. I was glad to find that though the whole uterus was small in size, the cavity was not much under the normal length.

I now kept the canal open by the frequent use of the sound, and had recourse to the usual treatment for amenorrhea. Among other things, I used warm hip-baths, sinapisms to the groins and mammæ, aloetic purgatives, steel, ergot of rye, and a remedy that has been recently much vaunted in foreign journals—apiol; but the ill success of all may be judged of from the fact that the first and second menstrual periods after the treatment commenced had an interval of eight weeks and one day—that is to say, she came under treatment on 29th April, the period being then some time past, and the first menstruation was on the 30th of May, and the next on the 26th July, being exactly eight weeks and one day between the commencement of one period and that of the other. The discharge in both instances, though more than formerly, was very scanty and for fully a fortnight before it commenced she suffered from pain and swelling of her breasts and other symptoms of the menstrual molimina.

I now resolved to use the galvanic pessary when the next period was nearly due; and in the meantime I continued the steel, and warm hip-baths every night, desiring her to use a syringe while in the bath, so as to throw a stream of warm water into the vagina. The history of the following periods may be shown in a tabular statement:—

Menstruation expected	Pessary introduced	Menstruation occurred	——
First attendance, April 29, - -	—	—	
May —, - -	—	30	
July —, - -	—	26	Eight weeks and one day interval.
August 23, - -	15	17	
September 14, -	11	13	Profuse discharge, lasting eight days.
October 11, - -	12	15	Tried without pessary till one day past the time menstruation was due.
November 12, -	9	13	Profuse discharge, lasting eight days.
December 11, -	—	12	No pessary introduced.
January 9, - -	—	—	Ditto.

The last menstruation was due on the 9th inst., but has not appeared. When I saw her on that day I found the body of the uterus slightly enlarged, so that I could distinguish it above the pubes, and as there was no sign of the menstrual molimina, I thought it just possible that conception might have taken place after the last period, and I did not introduce the instrument. When I examined the uterus I found the cervix as large as in healthy women, and the os so large that I have no doubt the sound would have passed freely through it, had I been inclined to try it—and this at the expiration of two months after the use of any instrument.

The object in the management of this case in the latter months was to establish the habit, or "the memory of the body," as Hunter calls it—and the question remains to be decided by time, as to whether that memory has been but of short duration, and that menstruation has failed for want of the memory having a refresher applied to it; or whether the organs have entered on still higher functions than merely menstruation.

During a visit to Edinburgh in September last, Sir James Simpson was so kind as to show me several cases in which he was using galvanic pessaries to stimulate the growth of ill-developed uteri; and it was

evident, from what I saw, that a very great degree of success had attended on their use.

The case now detailed establishes, I think, that the galvanic pessary will not only stimulate the growth of the uterus, but also that by its use the occurrence of menstruation may be determined at the proper periods.

In two other classes of cases I have tried this method of treatment: First, in cases of deficient involution of the uterus after labour. In some chronic cases of this kind I have tried it, with the hope that the continuous galvanic current would stimulate the processes by which the uterus is restored to its normal size, but without any beneficial effect.

The second class of cases I have tried it in is where chronic thickening of the uterine walls remains as the result of a sub-acute inflammatory condition occurring after labour. I have a case of this kind in hospital at present where this state existed eight months after delivery, and where the wearing of one of these pessaries for the last fortnight has greatly reduced the thickening and induration that had existed. The introduction of the pessary in this case caused a menstrual discharge, in the first instance, which had not taken place since her confinement, though she had not been nursing; though I did not remove the instrument because of the discharge, it ceased at the expiration of five days.

That a very considerable chemical and galvanic action goes on while the pessary is in the uterus is evident from the deposit found on the zinc portion of it when removed. This may be seen in one of the pessaries I exhibit, which I removed from a patient to-day, and present in the state in which I found it.

Another evidence of this action is afforded by a pessary that has been in use for a considerable period, the zinc portion of which is so corroded in one place as to have formed a perforation.

In some cases I have ordered a mixture of vinegar and water to be injected into the vagina when the instrument was in, with a view to increase this action; and when the instrument is long in use it is advisable to take it out occasionally to clean the surface of the zinc.

The pessary consists of a stem, half of which is of copper and the remainder of zinc. This stem is attached to an oval bulb, and the whole is made of a thin shell for lightness. The stem is placed within the uterus, the bulb remaining in the vagina, with the os uteri resting on it. The stem is made of different sizes or diameters, and about two inches and a quarter in length—that is, a quarter of an inch less than the normal length of the uterus, lest it should press injuriously on the fundus. For a case, where the uterus is shorter than usual, at present under my care, I have had the stem shortened in proportion to the length of the uterus, so that it may still be kept from pressing on the fundus.

In introducing the pessary a uterine sound is placed in an opening left in the bulb for the purpose; then, the sound being held in the right

hand, the left forefinger is placed against the os, and the pessary is run up on the finger, and with it guided into the os. When the uterus lies with its fundus well directed forwards the pessary will remain in without support; but when the uterus is more vertical, a disk pessary must be placed in the vagina to keep the galvanic pessary from falling out.

The patient experiences very little inconvenience from the presence of the instrument, and can pursue her ordinary avocations while wearing it. In some cases it may be worn for months; but when the object is to establish a regular habit of menstruation it should be introduced a few days before the time the discharge should occur, and be removed as soon as it appears.—13*th January*, 1866.

Medicated Pessaries.—Dr. Kidd exhibited specimens of medicated pessaries and suppositories, and of the substances used for making them, and made the following remarks:—

I believe all who are engaged in the treatment of uterine disease admit the usefulness of keeping certain substances constantly applied to the diseased structures. Of the substances used, anodynes, astringents, and alteratives, such as the preparations of mercury and iodine, are most valuable, and a good mode of applying them is very desirable. Sir James Simpson suggested, many years ago, the use of "medicated pessaries," in which a combination of lard and wax was used as the foundation with which the medicinal substances were incorporated, and made into balls that might be introduced into the vagina.

Dr. Tilt has recommended the use of cotton wool, with which the medicines to be used are to be incorporated, and the cotton placed in the vagina by means of the speculum, a thread being attached to the cotton by which the patient may remove it. In some cases I have used this method, but a pessary that could be introduced by the patient herself is in most cases more useful.

The great difficulty is to get the pessaries so made that they will be firm enough to be introduced by the patient herself, and yet melt at the temperature of the body. In the fourth volume of the *Transactions of the London Obstetrical Society* there is a paper by Dr. Tanner, recommending the use of the butter of the cacao theobroma for this purpose. This substance was brought into notice by Mr. White Cooper as a foundation for ophthalmic ointments, in a paper published in the *Lancet* in June, 1862, and Dr. Tanner recommended it for pessaries because of its being firm at low temperatures, but melting at that of the body. Since the publication of Dr. Tanner's paper, I have made repeated efforts to obtain pessaries made as he recommends, but without succeeding in getting them made of a uniform character—as they would sometimes be too soft, at others too hard.

In the *Edinburgh Medical Journal* for May last there is a paper by Sir

James Simpson describing pessaries and suppositories he is at present in the habit of using; and during a visit to Edinburgh, in September last, I obtained some of those from Messrs. Duncan and Flockhart, which on my return I showed to some of our Dublin apothecaries, and asked them to make me similar ones. Mr. W. Pakenham, the present proprietor of the establishment in Henry-street, instituted a series of experiments for the purpose, and has succeeded in making both pessaries and suppositories such as I now exhibit alongside of the Edinburgh ones, to which I believe they are fully equal, they will, I think, be found to fulfil every purpose.

There are three substances in the market derived from the fruit of trees of the order of *Palmæ*, and each of them called cocoa-nut butter.

1. Palm oil, derived from the fruit of the cocos butyracea. 2. Coco olein, derived from the kernel of the cocoa nut—the fruit of the cocos nucifera. 3. The produce of the cocos theobrama, the substance recommended by Mr. White Cooper for ophthalmic ointments, and adopted by Dr. Tanner, for pessaries, which is obtained from the fruit of the chocolate tree.

Of these substances the palm oil may be dismissed as unfit, from its softness, for the purpose required. The butter of the cocos theobroma, of which I show a specimen, obtained from the London Exhibition of 1862, is a firm, hard substance, which, if it were easily obtained and were certain to melt at the temperature of the body, might answer very well for forming pessaries, but it is not common in the market, and seems not to melt very easily. On applying at different establishments for specimens of it, and even at the same establishment on different occasions I have never twice got the same substance. The specimen I show is part of one obtained by Mr. Tichborne, of the Apothecaries' Hall, from the Exhibition of 1862, and by him given to Mr. Pakenham.

The coco-oleine, or butter from the cocoa-nut, the fruit of the cocos nucifera, is easily procured. It has the pleasant odour of the cocoa-nut. At the ordinary temperature of the air it retains a solid form, but it melts too easily to be used by itself for pessaries. Mr. Pakenham has found that by mixing it with certain proportions of wax it acquires firmness, and yet retains its power of melting at low temperatures, and it is a combination of this kind that he uses.

Almost any medicinal substances may be made into pessaries, or suppositories, with this combination, and by making them in moulds they are given a conical form, which greatly facilitates their introduction either into the vagina or rectum, where they melt very rapidly.

Patients have sometimes objected to the use of medicated pessaries, because they melt so rapidly, and, running out of the vagina, soil their clothes. To obviate this, I have been in the habit latterly of having them made as small as suppositories, but there is a difficulty in introducing these, and some substances that are often very useful are too

bulky to be so used, such as the oxides of bismuth and zinc, tannin, iodide or bromide of potassium, &c.; and I have been trying some other substances as a foundation, such as starch boiled in glycerine, but without success for so far.—13*th January*, 1866.

Dr. Denham related a case he had recently been called to, in which, though the patient was in labour of her first child, the hymen was unruptured, and presented only a very small opening anteriorly.—13*th January*, 1866.

TRANSACTIONS OF THE COUNTY AND CITY OF CORK MEDICAL AND SURGICAL SOCIETY.[a]

SESSION 1864-65.

Dr. David Cremen, President.

Notes on Delirium Tremens. By R. W. Day, M.D.

Case I.—I was called to see Captain H., of an American vessel, which had just arrived from Liverpool late this evening. I found him walking up and down his cabin in a most excited state. He told me he had no rest of any kind for four nights; that since leaving Liverpool not a particle of any food had passed his lips, but that he was perpetually tippling *gin*, having consumed two gallons of it!! (This was subsequently verified by his mate.) He complains of intense weakness of his limbs, a burning heat along the back of wrists and hands, and great fulness in the head and behind the ears. The tongue very much coated; skin very slightly moist; bowels constipated; face flushed; eyes injected and ferrety. Ordered, hyd. submur., gr. 6.; jalapæ, ½ drachm; olei. crotonis, gtts. iv. M. Mellis, q.s., for bolus. Statim. And when the bowels were relieved to have 1 gr. of morph. murias.

Nov. 1st.—Bowels affected four times during the night; stomach very irritable; vomiting enormous quantities of bile; the pill was also rejected. Ordered a saline effervescent mixture and four pills, each to contain 1 gr. of opium (crude), one every second hour. The uneasiness about his head is much relieved; skin more perspirable; tongue cleaner; pulse soft and full; the muscular tremor greatly increased, as all stimulants were withheld.

Evening.—He has taken the four pills without enjoying any sleep; the irritability of the stomach has ceased; the bowels twice well affected since morning; the muscular jerkings very annoying. Ordered tinct. opii m. xl.

[a] These reports are supplied by Dr. Curtis, Secretary to the Society.

2nd.—In an hour after taking the draught he fell off into a deep sleep, which lasted six hours. I found him discussing a hearty breakfast of chops and wildfowl. The tremors have gone; his tongue is perfectly clean; no headache, but a slight feeling of lightness; says he feels quite able to go out and attend to his duties.

In this case my reason for cutting off the supply of stimulants was that I considered the nervous exhaustion present was not intense enough to demand them, and I am fully convinced that their exhibition in even small quantities would have retarded the convalescence I was so desirous of bringing about. Since this date, I have attended four-and-thirty bad cases of delirium tremens successfully, adopting, with slight modifications, the same line of treatment. The last case that came under my notice, in September of this year, was characterized by the most violent spasmodic jerkings I had ever seen. It was the third attack in two months the gentleman was suffering from. I gave chloroform in half drachm doses with magical effect; two draughts of it sufficed; the spasms vanished; sickness of the stomach, which was annoying considerably, was allayed, and sleep induced.

I append to these imperfect notes the history of a case kindly sent to me by my friend Staff Assistant-Surgeon Wright, which may prove worthy of the notice of the society.—*October* 31, 1861.

Notes of a Case of Delirium Tremens, from Staff Assistant-Surgeon T. Wright, M.D., Cape St. Mary, coast of Africa.—The patient was a sergeant-major, and had been drinking very heavily for days past. On first entering hospital the treatment commenced with morph. acet. in grain doses, but without effect. Battley's solution was then ordered in half-drachm doses every three hours. Of this preparation he got twelve doses without inducing sleep, or even quieting him. Although he was most violent, and required the care of four men incessantly to keep him in the ward. A consultation was now held, and it was determined to try the digitalis, as first recommended, I believe, by Mr. Jones, of Jersey. Accordingly half-an-ounce of the tincture was given, and ordered to be repeated every six hours. He had three doses; the last told. The pulse, which was 120, came down to 110, and he fell into a profound sleep, which lasted fourteen hours, awaking cured.—*Sept.* 23, 1865.

Two Cases of Paraplegia, with Remarks. By E. R. Townsend, Jun., M.D., Physician to the Cork South Infirmary and County Hospital:—

A Case of Acute Paraplegia depending on Meningitis of the Spinal Cord, under the care of E. R. Townsend, Jun., M.D., T.C.D.[a]—Jehan Vidozic, aged forty-one, an Austrian sailor, was admitted into the South Infirmary

[a] Reported by Mr. J. J. Fitzpatrick, clinical clerk.

and County Cork General Hospital, May 13th, 1865, labouring under complete paraplegia. History of the case:—Had been at sea during very severe weather, and was constantly wet through, and one night he slept in his wet clothes. On the Monday before admission he suddenly lost the use of his legs and fell on the deck. When he got u he was barely able to stand, but could do so with support. He was immediately conveyed to his berth, and very soon lost all power over his lower limbs; they also became quite rigid, so that he was unable to stir them at all. Symptoms on admission:—Complete loss of motion of both lower extremities, from the waist downwards, with greatly increased sensibility; limbs quite rigid; recti-abdomini muscles also quite rigid and tense. Screams and grinds his teeth if he is touched on the legs or abdomen; cannot even bear the pressure of the bed-clothes. The spasms brought on by even slight pressure with the fingers over the recti muscles almost amount to those of tetanus. His countenance is expressive of great anxiety and suffering, the corrugatores supercilii being spasmodically contracted. The surface of his body is bathed in a profuse perspiration; pulse calm, 80; has perfect control over both rectum and bladder; urine acid, suffers much from priapism; has a painful sensation, as if a cord was tied round his waist.

Treatment, May 14th.—Ordered gr. 5. of iodide of potassium every fourth hour.

15th.—Complains of intense pain over the sacrum and lumbar vertebræ; cannot bear to be touched; grinds his teeth and screams when even gentle pressure is made over the spine, particularly over the lumbar region. Sixteen leeches to be applied over the upper part of the sacrum; cupping glasses to be applied over the bites. Ordered ℞ secale cornuti, gr. 3, in pulv. ter in die; to continue mixt. potass. iod.

16th.—Pain in back still continues; has not slept since his admission. Ordered twelve leeches over the lumbar vertebræ, to be followed by the cupping glasses; to take three grains of ergot in powder every six hours; to continue the iodide of potassium every three hours; to take beef-tea; his appetite is good, and he eats bread with a liking; is very thirsty.

17th.—Twelve leeches to be applied over the spine, where the pain is most intense; to be followed by the cupping glasses; nates to be sponged with whiskey; pulse 80; does not appear to be suffering so much pain; stirs the toes of one foot slightly, but cannot bear to have his legs touched. No reflex movement produced by tickling the soles of the feet, but it gave him so much pain the experiment could not be repeated. Ordered, tinct. hyosciami ʒi., aquæ ʒi.; fiat haustus hora somni sumendus; this to be repeated in three hours, if he does not sleep.

18th.—Refused to take the draughts last night; did not sleep; is constantly groaning and screaming at night with pain. Since the last application of the leeches he has ceased to feel the cord-like constriction

round his waist. To continue the ergot and iodide of potassium. Ordered, tinct. hyosciami, 1½ drachms; aquæ, 1 oz.; fiat haustus; to be taken at night, and repeated in four hours, if he does not sleep.

19th.—Took the draughts, but did not sleep; says the pain kept him awake. Ordered twelve leeches over the dorsal region of the spine, to be followed by the cupping glasses. ℞. Extracti hyosciami, gr. 3; fiat pil. 1; h.s.s.

20th.—No sleep; very restless, and hard to get him to take his medicine. Ordered, ℞. Pulv. secale cornuti, gr. 3; extracti hyosciami, gr. 1; fiat pil. 1; mitte tales, 12; sumat, 1 quartis horis; applicentur cucurbitulæ sine ferro dorso. To continue mixt. potass. iod.; beef-tea, &c.

21st.—Had some sleep last night, and has become quieter and more manageable; the peculiar anxious expression of countenance is less; the entire trunk and extremities are covered with sudamina, resembling the eruption caused by croton oil.

22nd.—Improved. To be dry cupped along the spine. To continue his pills and mixture.

25th.—Rigidity of lower extremities less; sudamina disappearing, though perspirations still continue; the peculiar anxious and contracted state of the corrugatores supercilii, and of the other muscles of expression of the face has subsided altogether; countenance is now natural.

26th.—Complains of some slight increase of pain in the lower extremities; to be cupped over the dorsal region of the spine. Several ounces of blood were taken by this means, after which he felt much easier.

29th—To be dry cupped along the spine; is now able to flex the knees a little, and can turn himself on his side by means of a cord suspended from the ceiling; is much better in every respect.

30th.—Pain in limbs greatly decreased; can move the limbs better; can raise the legs up a little, and can flex the knees fully. To be dry cupped again along the spine. To continue the mixture of potassii iodidi and the pills.

31st.—A belladonna plaster, six inches long by two wide, to be applied to the spine; the urine for the first time proved to be alkaline.

June 1st.—Was taken out of bed and put sitting in a chair, to which he was fastened for support; complained of intense pain in his legs, with great rigidity of gastrocnemii muscles, but was glad to change from the bed; sat up several hours.

4th.—Has sat up every day since, and says he feels much better. To continue everything.

6th.—Contraction and rigidity of the muscles much less; is able to move both legs well, and is even able to stand on them with support, but says it gives him intense pain in the calves of his legs. He stands on

the toes like an opera dancer, and cannot place the soles flat on the ground. He cannot bring the heels to the ground at all.

7th.—Was taken out into the garden to-day, where he remained the entire day. He was allowed to smoke for the first time, and seemed to be quite free from pain, but the muscles are still very rigid.

8th.—Is now able to get out of bed without assistance; the gastrocnemius muscle of right leg is much more contracted and rigid than that of the left. Only complains of slight pain on touching the limbs; can now walk round the table in the ward, holding on by it. To have two ounces of wine at dinner.

11th.—Since last report has been improving rapidly, every day walking better. He can now walk without any assistance; the toes are still slightly drawn along the ground; still complains of a little pain and stiffness from the knees downwards. The urine has been constantly tested, and always found to be acid, except on the one occasion mentioned.

12th.—To omit the ergot pills and the potash mixture; can walk up and down stairs quite well.

14th.—To rub the calves of the legs with the stimulating liniment, as he still has some stiffness in them; complains of perspiration at night. Ordered to take one ounce of the following mixture three times in the day:—℞. Quininæ sulph., gr. 8; acid sulph. aromat., ʒiss.; aquæ, ad ʒ viii.; fiat mistura. This he continued to take until the 21st, when he felt quite well. He was able to walk as fast as ever he did before his illness, but could not run well, in consequence of the stiffness remaining in the gastrocnemii muscles. He was able to climb up a tree.

He left the hospital on the 23rd June, with the power of motion fully restored in both legs, and the sensation perfectly normal. He felt quite able to join his ship, and said he thought he could go aloft as well as ever.

This man was admitted into hospital on the sixth day from that on which he first lost the use of his limbs; the paralysis came on suddenly, and was obviously caused by his sleeping in wet clothes after the hardships he had undergone during very severe weather at sea. He had previously been a very healthy man. The suddenness of the seizure is remarkable in this case; he was standing on the deck when he suddenly lost the use of his legs, and fell down; on being taken up could not stand without support. He was immediately conveyed to his berth, and, soon after being placed in bed, completely lost all power over his lower limbs, and they became quite rigid. This aggravation of his symptoms on being put into bed was manifestly caused by the tendency which the horizontal posture has of increasing the congestion of the spinal cord, and should be borne in mind in treating cases of paraplegia due to that lesion. From the history and symptoms of the case I diagnosed it to be

inflammation of the membranes of the cord, with exudation sufficient to cause pressure on the cord, or on the nerves leaving the cord, complicated with congestion of the cord itself, and probably some effusion into the lower part of the vertebral canal. That the meninges of the cord were in a state of inflammation was evident from the rigidity of the muscles, both of the back, abdomen, and lower extremities—from the intense pain caused by any pressure on the back—from the violent spasms, which were almost tetanic, and from the pain which the slightest pressure, or even the slightest touch, of the abdominal muscles, or the least motion of the lower extremities, gave rise to—in fact, from the extreme state of hyperesthesia of the lower extremities, and also from the acidity of the urine.

Ollivier, in his work on the spinal cord, Vol. II., Chap. VII., says there are two symptoms which may be considered as pathognomonic signs of acute inflammation of the membranes of the cord, since they are, if not always, at least frequently, combined; the first consists in a general contraction of the muscles of the posterior part of the trunk, which may vary from simple muscular rigidity to the most violent contraction. This tetanic contraction manifests itself principally when we wish to make the patient move; and it even happens that it does not exist when the body is in a state of complete rest. The muscular rigidity is seated principally in the trunk, without the extremities participating in it. These, however, are often equally affected. The second symptom is pain, more or less acute, in the dorsal region; it seems to commence, in general, from the point where the inflammation is most intense, and there, also, it is always most acute. It, as well as the muscular rigidity, presents remissions, and sometimes even disappears in order to manifest itself anew. The pain may exist without any perceptible muscular contraction, but it is ordinarily accompanied by this phenomenon or by convulsive motions, and uniformly the rigidity of the muscles manifests itself immediately or a little time after the pain has appeared. The violent pain complained of by patients, along the spine, is a constant symptom of spinal meningitis; sometimes it darts rapidly from the point primarily painful to the entire extent of the back; its radiations are extended to the limbs, and the slightest pressure, or a mere displacement, makes the patient scream aloud.

This morbid exaltation of the general sensibility is an almost constant phenomenon in spinal meningitis, and there is commonly observed no diminution of this property, a circumstance which assists in distinguishing this inflammation from myelitis, which is ordinarily accompanied with a more or less complete abolition of the sensibility; thus this sign may serve to characterize inflammation limited to the membranes of the spinal cord, since in the one the sensibility is exalted, and in the other it is weakened or destroyed. The combination of these two symptoms

characterize, in a manner, acute inflammation of the spinal meninges, for in all the cases in which both were observed the *autopsy* showed an inflammation of the entire extent, or of the greater part, of these membranes; and but rarely the inflammation occupied but a very limited space. To these symptoms must be added, more or less acute pains in the limbs, with greater or less rigidity of these same parts. Ordinarily copious sweat covers the patient during the attack when the tetanic contractions are intermittent. In this case, from the greater intensity of the pain over the lumbar region, it was evident that the disease was principally situated in the lower part of the cord, more particularly in the lumbar part of it, though for several days there was a manifest tendency to spread up along the dorsal region. The seat of the inflammation in cases of spinal meningitis, and also in myelitis, must influence the prognosis very materially; the higher up the seat of the lesion the greater the danger to the life of the patient. Should the lesion be seated in the dorsal region, between the two enlargements of the cord, the respiratory muscles, which are under the influence of the dorsal spinal nerves, are frequently agitated by violent spasms, and the breathing is accomplished by short and painful efforts; if the disease extends higher up deglutition becomes difficult, the respiration abdominal, and the patient soon sinks from effusion into the bronchial tubes. It has been generally noticed that the symptoms of irritation and inflammation of the spinal cord are much more early manifested, and are generally more serious in their consequences, when the dorsal region is affected than when either the cervical or lumbar are the seat of the disease. This has been accounted for, by Mr. Earle, from the construction of the spine. In the dorsal portion of the spine the calibre of the canal is narrower and more closely adapted to the volume of its contents than in any other part. In the cervical vertebræ, where the extent of motion between vertebra and vertebra is greater, the canal is of a triangular form, and large in proportion to the size of the cord; in the lumbar vertebræ it is also triangular and capacious, and the dura mater is loosely connected with the bony canal; a considerable space, moreover, is left between the opposed surfaces of the arachnoid, so as to allow of a sufficient play of one surface on the other, and thus at the greatest extent of natural curve no pressure can take place; hence in the dorsal region the slightest congestion or effusion is productive of more serious symptoms (from the canal being smaller and more completely filled with the cord and its membranes) than in the lumbar region, where, from the greater capacity of the canal and looseness of the membranes, even considerable effusion may exist without producing such serious consequences; and, therefore, the prognosis is more favourable when the inflammation is confined to the lower part of the cord or its membranes than when it extends or commences higher up. The treatment adopted in this case was, at first, the

application of leeches and cupping-glasses where the pain in the back was most severe, and after each application he felt relieved; after the third leeching he lost the cord-like sensation round his waist. When the severity of the pain was somewhat diminished dry cupping was tried with very good effects; and when, after some days, the severe pain returned, it again yielded to the application of the cupping-glasses, with the scarificator. The internal treatment was, from the first, by the administration of iodide of potassium in five-grain doses, every four hours, afterwards increased to every three hours; he was also put on ergot of rye, at first in three-grain doses, every six hours, and, as it produced no unpleasant effects, after three days I directed it to be taken every four hours, combined with extract of henbane; these pills he continued to take from the 16th of May to the 12th of June, thus taking eighteen grains of powdered ergot daily, for nearly a month, without any unpleasant consequences, and with the very best effect, the result being most satisfactory. This is now the fourth case of paraplegia in which I have used the ergot of rye, and in each case the effects have exceeded my most sanguine expectations. This drug was first suggested, in cases of paralysis, by M. Barbier, of Amiens, who considered it as a remedy possessing the same power as strychnine, but in a more manageable form; and M. Payan, of Aix, reasoning on the special action which the secale cornutum seems to have on the nervous system, producing, as it does, feelings of tingling and involuntary spasmodic movements of the legs, tried its effects in paraplegia, and in many cases with the most encouraging results.

From repeated and careful observations he concluded that where neither great pressure (not beyond that which simple congestion produces, nor disorganization of the spinal cord exists, its remedial power is very great. It is especially of use in cases where there is paralysis of both rectum and bladder. At the Bicêtre, M. Guersant has established the fact of its efficacy as a means of resuscitating muscular contractility of the rectum and bladder, and of assisting the latter organ to expel the remains of a calculus left after lithotrity. Brown-Séquard says that of all the medicines employed internally in cases of paraplegia, the two that are most powerful in diminishing congestion of the spinal cord are belladonna and ergot of rye, and that he has seen the diminution in the calibre of blood-vessels of the pia mater of the spinal cord taking place in dogs after they had taken large doses of belladonna or ergot of rye. He has also ascertained that the reflex power of the spinal cord becomes very much diminished under the influence of these two remedies, which in so doing act just in the opposite way to that of strychnine; he therefore advocates the use of ergot of rye in cases of paraplegia due to congestion or inflammation of the spinal cord or its membranes. As soon as this man was able to bear any movement he was placed as much as possible on his side, and changed from side to side constantly. After a little time

he was able to turn himself on his side, by means of a rope suspended from the ceiling; two days after this I had him taken out of bed and placed in an arm-chair, to which he was obliged to be fastened to keep him from falling forward. From this day he rapidly improved; indeed, from the result in this case, and also in M'Carthy's (see *Dub. Med. Press*, July, 1864), I look upon change of posture, from the horizontal to the erect position, or as near to it as possible, of the utmost importance in the treatment of all cases of paraplegia, either caused by or complicated with congestion of the cord or its membranes.

For the next case I am indebted to Dr. W. C. Townsend. The patient, Alexander Scott, aged thirty, was admitted into the South Infirmary, under the care of Dr. W. C. Townsend, May 31st, 1865. History:—Was a labourer at Beamish and Crawford's brewery, and for five weeks had a dull pain over the lumbar region, which he ascribes to his having, whilst intoxicated, slept out one night in wet clothes. The pain continued until the 29th of May, two days before his admission, when he first noticed, on getting out of bed, that he had lost the use of his right leg. He was unable to stand or lean any weight on it. He applied to the dispensary doctor, who blistered him very severly over the lower part of the spine. Not feeling any better he applied at the hospital, and was admitted on the 31st of May. Symptoms on admission:—Complete loss of motion in the right leg, from the waist down. Sensibility somewhat increased in the affected limb. The temperature of the right leg is higher than that of the other; appetite bad; perspires at night; complains very much of the soreness of his back, from the blister.

Treatment, May 31st.—Blue pill and squills at night, and sulphate of magnesia in the morning.

June 1st.—Repeat pills at night; back to be dressed with simple cerate; symptoms same as on admission.

3rd.—To continue the pills,

5th.—Ordered two grains of quinine in two ounces of sherry twice a day.

6th.—Temperature and sensibility of both legs nearly equal; blister on back nearly healed.

8th.—Is able to stir the toes of the affected leg very slightly. Continue pills and quinine.

9th.—Ordered the mixt. of potassii iodidi, gr. 5, ad aquæ, oz. 2, ter in die; to omit the quinine, but to continue the wine, four ounces in the day; symptoms same as last report.

10th.—To have a warm bath.

11th.—To continue mixt. potass. iod. Electricity to be applied to the limb.

12th.—Symptoms much the same. He continued in this state, and

under this treatment, up to the 21st, when, during the absence of Dr. W. C. Townsend, having come under my charge, I determined to try the ergot of rye with him, still continuing the iodide of potassium.

On June 21st I ordered him the following:—℞. Pulv. secale cornuti, gr. 3; pil rhei comp., gr. 2; extracti hyosciami, gr. 1; fiat pil, 1; mitte, 12; sumat, 1; ter in die.

23rd.—Power over right foot appears gradually increasing; makes an effort to stir the toes slightly.

25th.—Stirs the foot better, and can flex the knee a little; has a feeling of numbness over the entire limb.

27th.—Same as last report.

28th.—Complains of a nervous feeling over him; has more power of motion in the leg. To omit the ergot and take pil galb. cum. col., 2; statim; to be followed by a draught of infusion of senna with valerian and sal volatile. To continue the iodide of potassium mixture with the addition of aromatic spirit of ammonia.

29th.—Resumed ergot pills.

July 1st.—To be dry cupped along the spine; to take only one pill at night.

2nd.—Feels better after the dry cupping; is able to walk a little with assistance, but drags the leg along the ground; the muscles of the limb are somewhat wasted.

4th.—To be dry cupped again along the spine; to continue the pill and mixture.

6th.—Same way.

9th.—To take the iodide of potassium in infusion of calumba, as his appetite was not as good as it was.

11th.—Complains of a tingling sensation in the right leg, which commences in the toes, and gradually extends upwards along the limb.

14th.—Omit ergot pills. Continue mixt. potass. iod.; feels better.

16th.—Motion and sensation much improved in right leg; temperature rather lower than in left leg.

17th.—Omit mixt. potass. iod.; to take quinine in sherry twice a day.

21st.—He left the hospital very much improved, able to walk tolerably well with the assistance of a stick; sensation quite restored, and the temperature the same in both legs. Since then he has attended as an extern patient, and is now able to walk as well as ever. The last time I saw him was about a month since, when he walked up from Riverstown, a distance of six miles, without the slightest difficulty. He said his right leg was now almost as strong as the left.

This case shows that ergot has a very powerful effect on the spinal cord. This man was taking iodide of potassium for some time before he came under my care, and had improved up to a certain extent, but did not seem to be progressing beyond this point. After a week or

ten days, seeing no change in him, I determined to try the ergot, still continuing the iodide of potassium, and in three days from his first taking the ergot a marked improvement took place in him, and from this out he continued to improve, and left the hospital very much better. The ergot in this case caused some unpleasant effects, which obliged him to omit it occasionally, and he was never able to take more than three grains, three times in the day, without its producing tingling in the affected leg; it also disagreed with his stomach, so that the dose had often to be reduced to three grains once in the day.

On the Constituents of Food, and their Relation to Muscular Work and Animal Heat. By F. C. DONDERS, M.D., Professor of Physiology and Ophthalmology in the University of Utrecht. Translated from the *Nederlandsch Archief voor Genees en Natuurkunde*, 1e Deel, Utrecht, 1864, by WILLIAM DANIEL MOORE, M.D., Dub., M.R.I.A.; Honorary Fellow of the Swedish Society of Physicians, of the Norwegian Medical Society, and of the Royal Medical Society of Copenhagen; Examiner in Materia Medica and Medical Jurisprudence in the Queen's University in Ireland.

I. INTRODUCTION.

THE rational theory of nutrition commences with the discoveries of Mulder in the year 1838.

In the establishment of the fact that the albuminous matters of plants and of animals agree in composition a foundation was obtained on which observers might safely build. Each subsequent investigation started from this proposition: plants prepare the albuminous matters of animals—and with this were closely connected the numerous questions respecting the theory of nutrition, and the metamorphosis of matter, with which thenceforward physiologists occupied themselves. It was tacitly assumed that the animal organism can form no albuminous matters, of which formation the grounds are even still wanting. In the supply of albuminous matters, therefore, a condition of animal life was found.

But it was known, and this fact received further confirmation, that vegetable food is relatively poor, while animal food is rich in albuminous matter. And, inasmuch as whole classes of animals live exclusively either on the one or on the other, it was evident that animal life may be maintained with little albumen, but that it may also use much albumen.

What was true in this respect of man?

The structure of his body, and not less his inclinations, wherein the conditions under which our race is laid are manifested, indicate

for him a place between herbivorous and carnivorous animals. Both kinds of food, it was inferred, were destined for his use. Two circumstances, however, could not escape attention. In the first place, that whole classes of our fellows are doomed to be vegetarians; in the second place, that in these classes we find least of all examples of the bodily and mental perfection of which we think our race is capable. Comparative considerations appeared further to justify us in seeking the cause of this inferior development, in part at least, in an imperfect supply of albuminous matters. The desirability, nay the necessity, of a more liberal supply was now strongly insisted on. Particularly the want of strength, or rather the slight power of work or energy, was referred to the deficiency alluded to. The fact was adduced that the muscles which perform the work consist for the most part of protein matters, and the metamorphosis of these muscles was looked upon as a necessary condition of their energy. Liebig—but Liebig alone—went, in his zeal for striking antitheses, even so far that he deduced all mechanical power directly from the use of organised albuminous matters, leaving to the fats and so-called carbo-hydrates only the inferior part of serving as heat producers. To such perilous propositions physiologists have, however, not committed themselves. It is indeed true, that we find in Bischoff and Voit, whose investigations were from the first animated by Liebig's spirit, still a feeble echo of the same doctrine; but we must be strangers in the domain of physiology to dispute the point with them, as if it had obtained general acceptance.

Of late years the principle of the maintenance of energy, so fruitful in its results, has been more and more applied to the phenomena of living nature. Moreover, new and important facts have been brought to light, which exercise a very essential influence upon our views respecting the relation of muscular work and of heat to the metamorphosis of matter. I refer especially to two, namely, the cooling of the blood in the lungs, and the slight increase of the urea in the urine, after the performance of muscular work. The first is important in its bearing on the theory of respiration, and on the place where the heat is produced. The second led to the conclusion that in muscular work the tissue is not wasted, but only gives the impulse to the metamorphosis of non-nitrogenous bodies, by transferring oxygen to them (M. Traube). One of our fellow-countrymen ventured still further, publishing a pamphlet, which leaves the impression on the reader that the use of animal food is to be considered, if not injurious, at least as rather superfluous for man.

It appears to me that such a statement should not be left unanswered. It is true that in general it is scarcely necessary to combat an error in the domain of science. Left to itself, it will almost always soon be forgotten, and so dies a natural death, which is also the strongest security against its resurrection. In practical life it is otherwise. Here tradition

keeps itself, through incompetent, still more than through competent judges, alive from mouth to mouth. Here it may therefore be expedient, if possible, to stifle in their birth incorrect ideas where they threaten to creep in. Let, however, no controversy be expected from me; I wish, without entering at large into the above doctrine, simply to record my own views upon the subject. Independently of what has been written by Traube and by Beins, it was certainly not unimportant to consider what idea respecting the origin of muscular work and heat the present state of science justifies. To this the following pages will be devoted.

II. BALANCE OF ENERGY IN THE ANIMAL BODY.

Never was a law received with such general approbation as that of the "indestructibility of force." When it was formulized, it appeared as if men had already been acquainted with it for years—had lived, thought, and worked under its influence. It forced itself upon us as a logical necessity. Poor in decisive proofs, it stepped into life; but we had intuitively the conviction that no facts would refute it, and it was used, forthwith, almost rather as a test of the correctness of observations than that it was thought necessary to check it by fresh investigations.

In the first contributions of J. R. Mayer,[a] in 1842, the principle is already fully expressed. Mayer adopts forces in the sense of *causes*, and starts from the fundamental proposition—causa "*æquat*" effectum. Therefore, he says, the effect is in its turn a cause, and herein lies its "indestructibility." But its form may alter, and it is thus "changeable." Mayer's treatise comprised the indication of the chemical energy, which in the combination of bodies is manifested as heat, a correct description of the relation between heat, motion, and gravity (a lifted load); lastly the idea of mechanical warmth-equivalent, which he also already expressed in "gravity"—in "kilogrammeters."[b]

[a] Annalen der Chemie und Pharmacie. Bd. xxxii.

[b] A kilogrammeter is the *work* necessary to bring a kilogramme (2·2055 lbs. avoirdupois) to the height of a mètre (3·2808992 English feet). By this work we have obtained a kilogrammeter "gravity" as energy. While the word "force" had in mechanics a definite signification, according to which it might be stated as a pressing weight, in kilogrammes, the words *work* and *energy* have been adopted in the first mentioned sense, instead of the word "force" still used by Mayer. A second measure, whereby to express it, is that of calories: a calorie is the amount of heat necessary to raise the temperature of a kilogramme of water by 1° C. (1·8° F.). Now the mechanical equivalent of heat is expressed by the number of kilogrammeters, which are the equivalent of a calorie, that is about 430; that is to say, that a calorie is used to raise one kilogramme to the height of 430 metres, and that, *vice versa*, a kilogramme, falling from the height of 430 metres, can produce one calorie. We easily obtain a just idea of work and energy from the measure with which they are measured. Any one who desires more exact ideas respecting this fundamental matter, may be referred to Helmholtz (Ueber die Wechselwirkung der Naturkräfte: on the Reciprocal Action

Mayer's essay passed unobserved by many; our highly esteemed colleague, v. Rees, immediately perceived its importance, and directed the attention of his friends to it. It was now easy to apply it to physiology. At the close of a public lecture,[a] delivered in the Winter of 1844, I remarked, that it was not sufficient to deduce only the heat developed from the metamorphosis of matter, but that in addition some other force (say work) must have its cause therein; and that only when neither electricity, nor light, developed by some animals, nor mechanical power, which proceeds from all, was lost externally; when therefore all were changed wholly into heat, could the quantity of heat developed correspond to the oxidation of the organic matters; finally, that these matters had been developed in plants under the use of the sunlight, so that we properly find, in the vital phenomena, the equivalent of the light used. All this, and much more, we find accurately and clearly set forth in the pamphlet soon after published by Mayer:—*Die organische Bewegung in ihrem Zusammenhange mit dem Stoffwechsel.* Heilbron, 1845.

Even earlier we find the principle of the maintenance of energy, without being as yet expressed, here and there correctly applied. When, for example, the efficacy of nerves and muscles as a source of heat was assumed, it was generally supposed that this efficacy had required as much chemical action as would have been necessary for the immediate production of the same heat. Liebig had even stated, that the heat which our muscular action can excite outside the body by friction, is as much a product of the metamorphosis of matter as the heat developed in the body itself. But no one was found to be faithful to the principle, and many a proof of inconsequence might be adduced.

Even in 1822 Dulong, and shortly afterwards Despretz, had compared the heat developed in animals with the oxidation in the body, and they had arrived at the result that at least the greater part, 0·7 to 0·9, of the heat given off can be deduced therefrom. In the calculation it was supposed that in organic food the oxygen is combined with hydrogen, and that the remaining hydrogen and carbon with the oxygen taking part in the combustion still develop as much heat as if they had been present in the elementary state. Thus for the burnt carbo-hydrates only so much

of Natural Forces. Königsberg, 1854), and to Bosscha (Het behoud van arbeidsvermogen in den galvanischen stroom: on the Maintenance of Energy in the Galvanic Current. Leiden, 1858),—in which two writings the profundity of the subject has not suffered from the popular mode of treating of it. We may here further remark, that we have to distinguish between energy at rest, *potential energy*, Rankine (a raised load which can fall), and energy in motion, *actual energy* (a body in motion, *force vive*). What both can perform is *work*, of which the result may in its turn occur as energy.

[a] Blik op de stofwisseling als bron der eigene warmte van planten en dieren. (Glance at the metamorphosis of matter as the source of the proper heat of plants and animals). 8vo, Utrecht. January, 1845.

heat was brought into calculation as the carbon therein existing, in the free state, would have developed. Helmholtz[a] proved the incorrectness of this statement. The heat arising from the combustion of alcohol had been known from the investigations of Favre and Silbermann, and a simple calculation showed that the alcohol alone, although formed with development of heat from sugar, in combustion produces more heat than the *carbon* of all the sugar which had served for the formation of alcohol would be able to do in the *elementary state*. By this consideration the deficit of Dulong and of Despretz was explained, without any necessity for assuming, with Liebig and with Mayer, a greater production of heat in the combustion of carbon in the elementary condition. It should be observed, that in the experiments of Dulong and of Despretz, the animals were at rest, and, so far as they might have moved, this movement here also was converted into the measured heat. According to the principle of the maintenance of work, only this, therefore, needed to be capable of being deduced from the chemical metamorphosis.

A few years before Mayer had expressed the great principle, physiologists had occupied themselves much with the balance between the matters conveyed into and out of the body. If neither in this manner did they penetrate into the proper laboratory of life, they obtained a starting point for further investigation: from the knowledge of the composition and of the quantity of the excreted matters, they ascended to the question, where and from what compounds were they formed, and by this they were led to analyses of the blood and of the tissues, which gave the answer to many a question.

In reference to the energy, the same task had now to be fulfilled. Here also it was necessary to begin by making up the balance. A certain quantity of chemical energy was introduced, under the form of organic food and oxygen, and the equivalent of what of this was used, is found again in the heat and in the mechanical work proceeding from the body. The two balances, that of the matter and that of the energy, form a whole. The thing is simple. The ingested and the egested elements are the same. Their quantity too has remained unaltered. Only the forms of combination differ, and with them the energy. In the combustion of what is taken in we obtain, in fact, much more heat, than in the combustion of what is excreted: it is the difference in their energy. Now to this difference corresponds exactly the sum of the heat developed in the body and of the heat-equivalent of the mechanical work yielded externally by the body.

If we know the value of the three factors mentioned the balance is ascertained. Other forms of energy do not enter into it. The light,

[a] Encyclopädisches Wörterbuch der medicinischen Wissenschaften. B. xxxv. Berlin, 1846. Art. Wärme.

which presses into the eye, the vibrations communicated to the auditory nerve, may physiologically be of great importance, quantitatively they are of none in our balance. To electric currents also, coming from without, the body is not, under ordinary circumstances, exposed, and the heat, which we, directly or indirectly, receive from without, remains heat, and passes as such (free or combined) again away from us. Thus nothing else is introduced than the chemical energy of our food and of the oxygen. And, as to the outgoing energy, we have, except what remains in the excreted matters, to do exclusively with heat and with mechanical work. Indeed, no perceptible loss of electricity takes place in man, and the so-called animal magnetism is a suggestion of ideas, no natural force.

But this balance having been ascertained, our task is not yet complete; it is only marked out. In the body numerous metamorphoses take place, which we must endeavour to follow step by step. But it would be quite complete had we succeeded in tracing the origin of the heat and of the mechanical work from the chemical energy, mediately and immediately. A wide field lies here before us, in which the seed begins here and there to shoot up, but the harvest is still remote.

III. DIRECT AND INDIRECT PRODUCTION OF HEAT.

Heat is in general the final product of change of energy. What occurs in nature as heat can only in part return to another form, and what cannot be communicated to a colder body remains heat for ever. Thus it is too in the animal organism. Just as water, carbonic acid, and urea are final products of the metamorphosis of matter, heat is the last form which the energy assumes. The heat which has once arisen in the body must remain heat, because it has no colder parts to warm. It is the excretum of the energy, partly disappearing as free heat externally, partly existing combined in the excreted gases and in vapour.

Heat arises in the body directly or indirectly, that is either as the immediate result of chemical action, with the sacrifice of chemical energy, or from other forms of energy, which equally were the result of chemical action.

Formerly the direct production of heat was assigned a prominent place. It was admitted that in the lungs, by chemical combination of the oxygen with constituents of the blood, much heat was developed, and it was supposed that, in spite of cooling through warming the air and the development of gases and watery vapour, the blood here assumed a higher temperature. According to this idea we might consider respiration as "serving to the production of heat;" and it was also not absurd to regard some constituents of the food as respiratory food. But when accurate determinations of G. v. Liebig and of Gavarret showed, in opposition to all earlier observations, that the arterial blood is colder than the venous,

the chemical theory of respiration, which through the investigations of Magnus had already begun to give way, seemed to have lost its last support. By the fact mentioned, however, development of heat in the lungs was not excluded: it was seen only that the production is less than the loss. Now the loss is, especially in cold dry air, very considerable; for not only does carbonic acid escape in the gaseous state, but the inspired air is also warmed to nearly the temperature of the blood and at this temperature almost saturated with moisture. If the heat developed here cannot counterbalance this loss, this does not show that heat is not produced. In the first place, the mere solution of the oxygen taken in would afford heat; but, moreover, we may readily assume, that even the loose chemical combination with the colouring matter cannot take place without the development of heat. That in the lungs we have not to do simply with a physical change of gases has indeed, been satisfactorily shown by more than one investigation, carried on in the school of Ludwig. One of the latest, that of Holmgren, affords even the direct proof, that the carbonic acid is expelled from the blood by the oxygen, not as if a vacuum, free from carbonic acid, were in question, but actively; and this is scarcely conceivable without the intervention of a chemical action. What is more, an investigation of Sachs, has recently contributed fresh reasons for the formation of carbonic acid, without the tissues, in the blood itself.

On the other hand we know that, in more than one way heat is indirectly produced. In all parts of the nervous system electro-motor action arises, which is not without influence on further chemical change, since it may even make the dissolved oxygen active and thus promote oxidation, while it also undoubtedly, under the influence of the great resistance presented by the badly conducting tissues, is in great part changed into heat. On irritation, according to Valentin, the development of heat increases in the nerve itself. Also in the muscles electro-motor action gives place to heat. Moreover the giving way of the elastic tension, which remains after each contraction, must be found again as heat (compare the following section). Further, the amount of heat is very considerable which arises from transformation of mechanical work of the muscles. I refer, with respect to this point, in the first place to the heart, the most active of all muscles, producing in twenty-four hours a work of about 86,000 kilogrammeters, which, wholly changed into heat, can warm fully 200 kilogrammes by 1° C., and therefore all the parts of the body by 3° C. (5°·4 F.). The work of the heart, at first in part transferred to the elastic vascular walls, causes the movement of the blood, and the friction connected herewith, consumes the tension, to replace it with heat, which is also the case, in so far as this tension forces the constituents of the blood through the membranes. And if by the friction in the capillaries the oxygen united to the blood-corpuscles may be

made active,[a] which I have long thought probable, we shall, in its union with other matters find again the work connected therewith as further product of heat, or under another form. I refer, moreover, to the movements of respiration, which are, it is true, slight in comparison to the energy which each time here arises and disappears as tension of the muscles, in order to give place to heat, but which, just like the action of the heart, never cease, and by friction of the air passing in and out, and friction of the passively moved parts constantly convert mechanical work into heat. The same is true of gastric and intestinal movement, and other involuntary contraction of muscles. Finally, in all transitory muscular action, friction must arise, both in the muscle itself and in the articulations, and in general in the passively moved parts; and thus, with consumption of mechanical work, heat is produced.

We may, on the ground of all this, safely assume what may also be more accurately proved by calculation, that the bodily heat is for the most part developed in and through the muscles, principally, as has been said, indirectly, but, as it appears, also directly from the chemical action. This last holds good, in fact, for all parts of the body. Everywhere, where there is capillary circulation, is arterial blood changed into venous, oxygen is chemically combined; and if neither elastic tension nor electromotor action supervenes, we are justified in inferring the direct origin of heat. Indeed in the high temperature of the blood of the hepatic veins (G. von Liebig and Gavarret), and of the saliva secreted under nervous irritation (Ludwig), we have the direct proofs of development of heat in non-contractile parts. And as in continued muscular work the circulation of the blood and respiration are more active, and evidently a greater quantity of blood is conducted through all organs, we have to expect everywhere an increase of the direct development of heat: in all irritated parts this increased activity manifests itself, after continued work, in the increase of irritation, in pain and swelling.

The conclusion is, that both in the blood and in the tissues, heat is produced directly from chemical energy; but that in addition the electromotor action in nerves and muscles, the energy of the elastic tension of these last, so far as it is not utilised in mechanical work—and lastly, a considerable part of the mechanical work itself are changed into heat.

IV. PRODUCTION OF MECHANICAL WORK.

As our muscles contract they are in a state to perform mechanical work. This contraction is the result of a change in the molecular

[a] Experiments of Saintpierre, Polytechnisches Journal, B. 162, H. 3, May, 1864, which have reached me while these sheets are passing through the press, seem to prove that mechanical friction really ozonises the oxygen of the atmospheric air.

condition, which depends upon chemical metamorphosis. At the moment when this change occurs, the corresponding contraction is not yet present. The change begins by producing a state as if the muscle was extended, a state wherein the energy consists in the form of an extended elastic body. The contraction itself now follows directly. In this sense Weber is right when he deduces all work of the muscles from elastic forces, which, in their turn, are the result of an altered molecular condition. A correct illustration of what happens here is supplied by a load hanging to a string which becomes shorter by imbibing moisture. The weight is gradually raised, in consequence of the greater elastic tension, which is itself the result of the molecular condition altered by taking up water.

The elastic tension of the contracted muscle cannot, however, be entirely converted into mechanical work. If the load is infinitely great the muscle maintains its original length, notwithstanding the altered molecular condition: of the elastic tension produced nothing is then used for mechanical work. Could the load be infinitely small, the work produced would be, though the load were moved, likewise infinitely small. In both cases, therefore, all mechanical work is wanting. But in any other loading also elastic tension still remains over at the end of the contraction, which is not converted into mechanical work—in general the more the greater the load is. Thus, by removing the load in parts, we see what remains each time rise somewhat higher, and thus with diminution of the tension mechanical work is developed; but finally, even on account of the weight of the parts of the body, elastic tension which can no more be utilised always remains over. The rule is, that the load is put off at a definite height, and as, at the same moment, the muscle relaxes, the just disappearing tension must appear under another form. This can hardly be any other than that of heat. It thus appears that by the relaxation energy is sacrificed, in this sense, that it is not used for mechanical work. But this relaxation is the *conditio sine quâ non* for the continuance of the work. In the relaxed condition alone is it possible that, by a fresh contraction, work should be anew performed. If the muscle continues tense the work ceases. What we here see is perfectly analogous to what the steam engine exhibits in the rising and falling of the piston. In this case, too, the tension remaining in the steam after the raising is sacrificed, and is, as heat, transferred to the cold water which condenses the steam. Now the piston can also again ascend, just as the relaxed muscle can again perform work. But as little as it can be called work when the piston is held above by unaltered tension of steam, so little is permanent contraction of a muscle, which holds a load only at the same height, to be considered as work. Mayer had already fully understood this. Strikingly he says:—"The performance of a man who with great effort holds a weight free, or stands for hours quite unmoved, is exactly—*nil;* the same, or indeed

much more, can be accomplished by a wooden statue." Béclard[a] calls the tension which makes equilibrium with a load, without moving it, *statical;* the movement *dynamical* muscular action. To this distinction we must strictly adhere. Superficially it appears something strange that the tension which is necessary for bearing a load at the same height is not to be called work. The muscles are thereby wearied as well as by raising a load, and the fatigue makes us involuntarily think of and believe in the performance of work. The strangeness, however, immediately vanishes when we take into consideration that in the statical action also work in the muscles is by no means excluded; we say only that there is now no work externally performed, and that we, therefore, must rediscover the whole equivalent of the chemical change which occurs in the muscles, in the body itself, at last under the form of heat. *A priori* we have even no right to set down the metamorphosis as less in the muscle which has only to support a load than in that which has to raise it. If in the first case the mechanical work is wanting, so much the more heat might be developed. In fact, Béclard found that the skin on the biceps muscle increases in heat in statical more than in dynamical action, and he thought that this difference might be brought into connexion with the equivalent of the work performed in dynamical action. *A posteriori* it appears, however, that in the muscle the change is actually less when no work is performed externally. Béclard's result is explained by this, that in dynamical action the circulation in the muscles is brisker, and the blood flowing in great quantity carries away the heat which has been developed from the muscle.

The great difference in the metamorphosis in statical and dynamical action is sufficiently evident from their influence upon the factors of the metamorphosis of tissue. Many years ago I instituted investigations upon this point, of which I have as yet published only the results.[b] Among these is the fact that in hoisting or lifting a load the pulsations of the heart increase much more in frequency than in mere holding, although the same power which extends the muscle in the first case acts only alternately, while in the second it acts incessantly. The influence on respiration, too, is known. "During a great effort," says Mayer, "it is usual to hold in the breath in order to obtain from the chest a firm support for the motor organs; but with this, however, an increased consumption is not yet necessarily combined. In cleaving wood, going up stairs, &c., no one will be tempted to hold in his breath."

In connexion with statical and dynamical muscular action I formerly, also, investigated fatigue. I found that this is not the same in both

[a] De la Contraction Musculaire dans ses Rapports avec la Température Animale. Paris. 1864.

[b] Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. 1859. D. ix., p. 113.

cases. The fatigue dependent on long-continued work yields only slowly; it depends on consumption of matter, and probably, at the same time, products of the metamorphosis of tissue are accumulated in the muscles and nerves. The fatigue caused by holding a load, on the contrary, speedily disappears, even if it were pushed nearly to extremes; and we have, in order to explain this, to think rather of impediments to the circulation, in consequence of pressure on the vessels in the tonically-bent muscle, than of diminished abstraction of products of metamorphosis—perhaps[a] also of pressure on the nerves. Even when, as a result hereof, the feeling of fatigue still continues, the muscle has again lost[b] its greater extensibility, which remains for a long time after continued work, and therefore its physical fatigue.

A muscle which contracts independently, and thereby moves a load, presents, at the first glance, something mysterious. It is not strange that in former times an attempt was made to explain this by assuming the existence of an equally mysterious force. Now, however, we know that a direct solution of such questions is not to be thought of, that we must have recourse to indirect modes; in other words, that we must investigate all that is in any way connected with the phenomena without previously asking when and how the solution is to follow. And certainly of late years physiologists have not been remiss in this direction. The structure of the muscular fasciculi, the termination of the nerves in the muscles, the elasticity, the production of heat, the electrical phenomena, the sounds even of the muscles have been investigated in the conditions both of contraction and of rest; and in order to explain the mutual connexion of these phenomena an attempt has been made to determine, with accuracy the moment of the rise, and the relative intensity of each phenomenon. The dependence on nervous action, the propagation of this action to the nerves, and further to the muscular fasciculi, the chemical composition of the muscles, the products of their metamorphosis, the influence of contraction on these products, even the blood returning from the muscles, have all been subjected to examination. Many important facts have in this way been brought to light. But the peculiar change of the molecular condition of the muscle, which determines the contraction, is still involved in obscurity. Of the connexion of the phenomena we may give the following sketch:—

[a] According to Leber (Zeitschrift f. rat. Med., xviii., p. 262), the irritated (not the resting) muscle is fatigued by mere extension; the fatigue is therefore determined not exclusively by the work performed.

[b] The mode of investigation, formerly (*l. c.*) indicated by me, may be found more fully described in Dr. van Mansvelt's dissertation, Over de Elasticiteit der Spieren (On the Elasticity of Muscles). Utrecht. 1863. [The English reader will find a translation of the description of this method in a notice of Dr. van Mansvelt's work, drawn up by me for the British and Foreign Medico-Chirurgical Review, Vol. xxxiii., p. 439.—TRANSLATOR.]

In normal life the muscle contracts under the influence of the nerves. The action herein excited (voluntarily, automatically, or by reflexion), manifesting itself in a modification of the electrical phenomena (Du Bois-Reymond), is propagated with tolerably great rapidity (amounting, in frogs, to about twenty-eight metres [nearly ninety-nine English feet] in the second—Helmholtz), and, as it seems, with increasing intensity (Pflüger) to the so-called primitive bundles of the muscles, which are to be considered as the terminal organs of the motor nerves. In the condition of rest the muscles have, with very slight tone, persistent elastic tension (Weber), and with consumption of chemical energy by oxidation, an electromotor action is developed (the cause of the "resting muscular current" of Du Bois-Reymond), and thus mediate, perhaps, also, immediate heat is produced; the muscular sound, too, appears to be present even in rest. The contraction (thickening with shortening), of the so-called primitive bundles proceeds from the points where the nerve fibres are attached with flat expansion mediately or immediately to the muscular substance, and is thence propagated to both sides in each fasciculus under the form of waves, so that a muscular fasciculus is not equally shortened throughout its whole length—in cold blooded animals with the rapidity of about a metre in the second; at the same time, too, the tone of the muscular sound rises. The shortening does not commence directly upon the arrival of the exalted nervous action; there is a latent period of about $\frac{1}{100}$ of a second (Helmholtz), with the commencement of which (von Bezold) an important phenomenon coincides and announces the approaching contraction: this phenomenon is an instantaneous electrical discharge (Meissner) lasting less than $\frac{1}{1000}$ of a second (von Bezold), comparatively weak, but still, probably, equivalent to that of the electric organ of fishes.[a]

[a] I here follow Meissner's view without assuming it to be proved. The case is briefly this—Meissner had found that on artificial compression of the muscle in the direction of its fibres a negative deviation of the needle occurs—the same phenomenon which iso bserved in active contraction of the muscle. He now thought that in the latter case, too, the change of form, with compression in a definite direction, might, in part at least, be the cause of the deviation. That Du Bois-Reymond had many years previously investigated the influence of extension and compression of the muscle on the force of the current, and announced as his result, that in compression "we most frequently see the current diminish," appears to have escaped Meissner; however Du Bois-Reymond was far from seeking therein the cause of the "negative deviation." In order to test Meissner's meaning, von Bezold determined (from the secondary action in a second muscle), the moment of origin, and also later, by comparison with the effect of artificial currents, the duration, and the course of the electrical change on the surface of a muscle after irritation of the nerve by an unclosing induction stroke. From this investigation it appeared that the change of electricity here occurring, consisting of sudden diminution and restoration, takes place immediately on the arrival of the stimulus in the muscle, and passes off in less than $\frac{1}{1000}$ of a second. As the muscular contraction does not begin until after a latent period of $\frac{1}{100}$ of a second, von Bezold correctly inferred that the change of electricity observed, as preceding the con-

On the occurrence of the shortening, the temperature of the muscle suddenly diminishes (Heidenhain and Solger, Thiry and Meyerstein), probably in consequence of the greater specific heat of the contracted muscle[a]; but in reality heat is developed (Becquerel and Breschet, Helmholtz) which, with tetanus lasting some seconds, in spite of the greater specific heat, makes the temperature of the muscle rise above what it originally was. The rise continues after the cessation of the contraction (Thiry and Meyerstein), which is to be ascribed, partly to the return of the original specific heat, partly to the yielding of the elastic tension, further, to the descent of the load just raised by the muscle, and probably to still continued stronger oxidation. The original cooling is greater the greater the shortening (Thiry and Meyerstein); the production of heat appears, on the contrary, to be about proportionate to the work of the muscle performed (the same).

A second phenomenon, connected with the contraction, is the modification in the electrical tension, which manifests itself on the galvanometer as diminution of the muscular current, and is therefore called "negative deviation." This continues so long as the state of contraction lasts; so long, also, as there exist on the surface of the muscle rapid alternations in the tension, proved by the secondary tetanus of a muscle, which by its nerve is in contact with the first. The negative deviation may be

traction, cannot possibly be the result of it. But is the change of current actually the same, which in tetanus produces the known negative deviation of the needle? Is it the disappearance and the return of the current in the muscle at rest? Meissner thinks this may be denied. The change of current, determined by von Bezold, he considers as a positive discharge, such as in tetanus is said rapidly to follow one another. His principal proofs consist in this, that in some few induction strokes of the nerve in the second, which are still insufficient to produce tetanus, in place of a negative a weak positive deviation of the needle is seen; and that also in tetanising the negative deviation is wholly absent, when the muscle is prevented from shortening, —while then precisely the secondary tetanus appeared particularly strong, and justified the inference of the existence of strong alterations on the surface of the muscle. These alterations (the discharges of Meissner) should therefore be distinguished from the negative deviation which follows, as a constant effect, on the compression by contraction.

The great difficulty in Meissner's theory is the negative deviation, which also the nerve-current itself gives on irritation; so far, in fact, nothing is known respecting change of form of the nerve on stimulation.

In thus provisionally adopting Meissner's view I nevertheless reserve my judgment In no investigation are so many sources of error to be met with as in that of animal electricity. We look with interest for the opinion of Du Bois-Reymond, who has laid the foundation of our knowledge in this department, and more than any one else has taught us to avoid each source of error. Though we may sometimes have to wait for his decision it is sure to come, and to be satisfactory.

[a] This explanation diminishes the value of the fact. Quite lately the fact itself (Professor Donders writes) is made very doubtful by new investigations of Heidenham himself, under whose direction it had been found by Solger, independently of Thiry and Meyerstein.

the result of compression by contraction, which, just like any other compression, diminishes the current of the resting muscle; and, independently of this, in tetanus a series of positive discharges arises, which produce the secondary tetanus, without, in their short duration, being able wholly to counteract the negative effect of the contraction on the galvanometer.

The connexion between the phenomena here described and the contraction, with the work connected therewith, has as yet been but imperfectly explained. The cold, occurring at the moment of the contraction, would readily suggest the idea of the metamorphosis of heat into mechanical work. Against this there is, however, a decided theoretical difficulty; and we might in refutation further state, that, precisely when work is performed, namely, when the muscle is loaded, the negative thermo-electric action dependent on the cold is least—if the consecutive production of heat, which under this circumstance, also, is particularly strong, might not easily conceal the cold which has just been developed. However this may be, there is no reason for assuming that the heat produced should disappear to give place to mechanical work. The electro-motor action rather stands in causal connexion with the contraction, in so far as it determines the molecular condition which produces the contraction and the elastic tension. But our knowledge on this point is very imperfect. We do not even know whether the tension, which is perceptible on the surface of the muscles, with the work which the muscle performs by its contraction, increases or diminishes. Meissner only states that when the muscle is prevented contracting, and therefore performs no mechanical work, the negative deviation, obtained by stimulation, is much less, while nevertheless the alteration of the current ascertained by a very strong secondary tetanus, may be more powerful than when contraction ensues.

Béclard had arrived at the result that the development of heat and of dynamical work in the muscular contraction compensate each other. Of the greater chemical energy sacrificed to the contraction, when it exercises dynamical work, this work should use so much that the heat developed would be not only relatively but absolutely diminished. I have already remarked that, in dynamical action, the blood circulating freely through the muscles carries off much more heat than in statical, and that hence the less elevation of temperature in the investing skin, observed by Béclard in dynamical action, can be explained.

Whilst now Thiry and Meyerstein, in their experiments on the free muscles deprived of circulation, saw an increased production of heat in general combined with increased work, the idea of a compensation of dynamical work and of heat seems to be completely refuted.

The conclusion is this:—An electrical discharge in the muscle, the direct result of the nervous action, leads, with the development of chemical

action, to a rapidly-increasing and again diminishing elastic tension (the contraction curve of Helmholtz). If a number of such discharges follow rapidly on one another, their effects combine each instant to an equal—and thus persistently to an uniform tension. In connexion with the elastic tension electro-motor action and heat arise.

The cause of the elastic tension is not known. It may be situated in the electro-motor action. This passes, however, also partly directly into heat, perhaps also into chemical energy.

It cannot be assumed that heat is changed into electric tension. Heat arises rather as the last form, partly, probably directly, from the chemical energy, partly mediately from the electrical currents and from the elastic tension remaining in the muscle after the removal of the load.

The origin of heat from elastic tension teaches that in the muscle more elastic energy is developed than is employed in mechanical work. Of the mechanical work a further part (that of the heart, stomach, intestines, &c.) passes into heat. *Consequently we recover in the mechanical work yielded externally only a part of the elastic energy produced in the muscles.*

(*To be continued.*)

Obituary.

It is now our painful duty to add other names to the melancholy list of those whom death has snatched away from among us. Though our losses have not been so numerous during the past as in the previous year, yet in the early part of it there passed from among us Wm. Healy, who was carried off by fever, at the age of forty-five, and George A. Kennedy, who had attained to the more goodly one of seventy-three, and who, though he had retired from the active duties of the profession for some years, still retained a warm place in the affections of his brethren; but as the year closed, death, not yet satisfied, made one fell swoop, and within a few days carried off three more of our colleagues, whose recent loss we still lament, and are now called on to record.

EDWARD HUTTON, M.D., F.R.C.S.I.,

Died 24th November, 1865; *aged* 68 *years.*

Edward Hutton is a name which shall ever be associated in the memory of those who knew him with some of the noblest attributes of man—with learning, combined with modesty, with firmness, tempered by gentleness, with decision, softened by kindness. Dr. Hutton was born in 1798, and received his education in this city; having determined to study for the medical profession, he was bound apprentice to the late Mr. Robert Peile; and, having graduated in arts in 1817, he obtained the diploma of the Royal College of Surgeons, in this city, at the early age of twenty-one, which he followed up by taking the Fellowship of the same college in 1824, before he was twenty-six years of age; having already, in 1822, obtained the degree of Bachelor of Medicine in Trinity College. In 1842 Dr. Hutton took the full degree of Doctor of Medicine in Trinity College, and in 1852 he was elected President of the Royal College of Surgeons. At a very early age, shortly after obtaining his diploma, he was appointed surgeon to the hospitals of the House of Industry; and those who had the good fortune to study under his guidance will ever remember with gratitude the valuable practical teaching they received at his hands. Edward Hutton was, however, not only a great surgeon he was also a sagacious physician; he was a most skilful operator, and a most successful one too; but he never allowed his better judgment to be overruled by his operative skill, and never permitted himself to be led to perform an operation for the sake of the brilliancy of the achievement; and "primum non nocere" was his constant maxim. It is very much to be regretted that Dr. Hutton published so little, as his mind was stored with valuable facts, the accumulation of

years of experience, which would have been of immense service in the cause of science; but with the exception of an article on the treatment of aneurism by compression, which appeared in this Journal in 1843, and some few contributions to the *The Medical Press*, and *The Dublin Hospital Gazette*, he published nothing else so far as we are aware.

Dr. Hutton died on the 24th of November, 1865, he was consequently only sixty-eight; he also, then, was carried away in the full vigour of age, and when, but for the fatal malady which undermined his constitution, we might have justly expected to enjoy the advantage of his knowledge and his skill for many years to come; but Providence willed it otherwise; "the kind teacher, the sound practitioner, the skilful operator, the wise and honourable consultant"[a] is gone to his long rest, and we can only mourn for his loss.

DANIEL PAKENHAM,

Died 23rd November, 1865; *aged 67 years.*

Mr. Pakenham long held the appointment of State Apothecary. In early life he resided for many years in the Meath Hospital, as apothecary to that institution, and here very many of the most eminent physicians of the present age obtained from him a knowledge of the principles of materia medica, and the elements of practical pharmacy. Here, too, he acquired that practical skill that in after years enabled him to become a most successful general practitioner. In him were found not only professional and scientific knowledge of a high order, but all the qualities that mark the true man; with a chivalrous sense of honour he combined rare earnestness of purpose and self-denial in the highest degree. He died on the 23rd of November, 1865, after ten days' illness of fever, at the age of sixty-seven.

JEROME MORGAN, F.R.C.S.I.,

Died 29th November, 1865.

But the medical obituary, says the President of our College of Surgeons in his address at the opening of the present session of the Surgical Society, makes a still more recent announcement. We have just lost a member who was highly esteemed, and is deeply lamented by all who knew him. The estimation in which he was held by this college is best shown by the length of time he filled the important office of Examiner in Materia Medica. Dr. Jerome Morgan was distinguished for the tact with which he put his questions, and for rectitude and kindness in dealing with the candidate.

[a] Words of the President of the Royal College of Surgeons in his opening address.

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